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Dental Digest

March 1950

IN THIS ISSUE

Speaking Centric 106

Treatment of Adamantinoma. 112

Mouth Reconstruction—
Outline of Technique 114

Hypnosis in Treatment 120

The Technique for an
Apicoectomy 121

Postural Defects of the Spine
and their Relation to the
Dental Position 123

Pressure Matrixes for Acrylic
Restorations 124

Clinical and Laboratory
Suggestions 126

The Editor's Page 128

Medicine and the Biologic
Sciences 129

Contra-Angles 134

(Complete Table of Contents Appears on Page 105)

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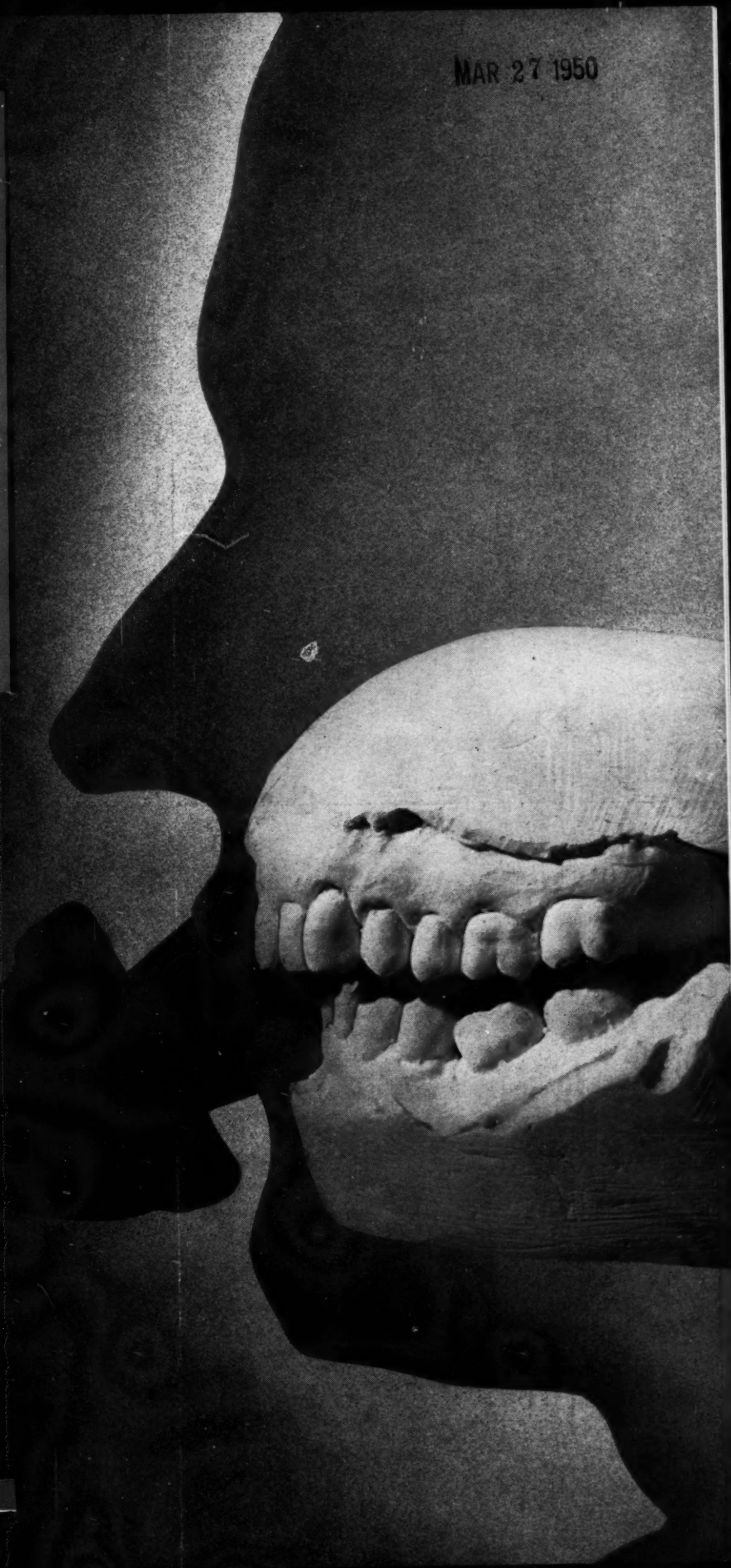

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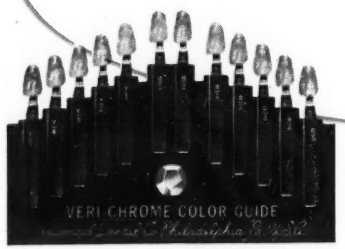

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Dental Digest

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MARCH 1950

Speaking Centric
Meyer M. Silverman, D.D.S. 106

Treatment of Adamantinoma
Joseph E. Schaefer, M.D., D.D.S., and Ralph C. Rudder, M.D., D.D.S. 112

Mouth Reconstruction—Outline of Technique
Mortimer C. Davis, D.D.S. 114

Hypnosis in Treatment (An Abstract) 120

The Technique for an Apicoectomy
Jack F. Cathcart, D.D.S. 121

Postural Defects of the Spine and their Relation to the Dental Position (An Abstract)
James P. Cole, M.D., D. Sc. (Med.), Buffalo, N.Y. 123

Pressure Matrixes for Acrylic Restorations
Henry I. Meyer, D.D.S. 124

Clinical and Laboratory Suggestions 126
1. A Convenient Polishing Cone. 2. A Surgical Drain. 3. Retention for Models. 4. To Create Additional Postdam on an Acrylic Denture. 5. An Aid in General Anesthesia. 6. Tongue Retraction Under General Anesthesia.

The Editor's Page ..... 128 Contra-Angles 134

Medicine and the Biologic Sciences 129

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MEYER M. SILVERMAN, D.D.S. (Georgetown University, School of Dentistry, 1934) is a general practitioner who has contributed articles on a variety of subjects to dental literature. Publishing in DENTAL DIGEST for the first time this month, Doctor Silverman presents SPEAKING CENTRIC, which calls attention to a third and highly important centric especially valuable in prosthetic treatment.

In the sixth of their series of case histories, TREATMENT OF ADAMANTINOMA, JOSEPH E. SCHAEFER, M.D., D.D.S., and RALPH C. RUDDER, M.D., D.D.S., describe in detail the surgery used in the removal of an adamantinoma in the lower right bicuspid area which had been excised twice previously.

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The magazine is mailed on the fifteenth of the month of issue.

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SPEAKING CENTRIC

MEYER M. SILVERMAN, D.D.S., Washington

DIGEST

Speaking centric is a relationship that must be respected in diagnosis and correction of occlusion. In dentistry, reference to the relationship between the maxilla and mandible commonly includes two kinds: (A) centric occlusion, and (B) centric relation. Attention is called in this article to a third and highly important centric; namely, **speaking centric.**

The third relationship is most important in the diagnosis of cases where the intent is to modify the occlusion orthodontically or otherwise. (1) It is important in the diagnosis of various conditions of the teeth and the periodontium and (2) it will help in the conduct of the proper treatment.

Speaking centric is also useful in prosthetic treatment, especially in the construction of full dentures and partial dentures involving the anterior teeth. This article presents a comparative analysis of the third relationship and discusses the practical applications where speaking centric should be respected. A case history is included.

Centric Occlusion

Anthony[1] defines centric occlusion as "the harmonious interrelationship of opposing teeth." It is the relationship of the jaws when the upper and lower teeth are in normal occlusal contact, and the condyles at rest in the posterior portion of the glenoid fossae (Fig. 1).

[1]L. Pierce Anthony: Prosthetic Dentistry, Philadelphia, Lea & Febiger, 1942, page 217.

1. ***Front and side views of Mrs. M. F. in centric occlusion. Note overjet of anterior teeth which is similar to overjet of centric relation in Figure 2. Compare with edge-to-edge position of anteriors in the speaking centric in Figure 3.***

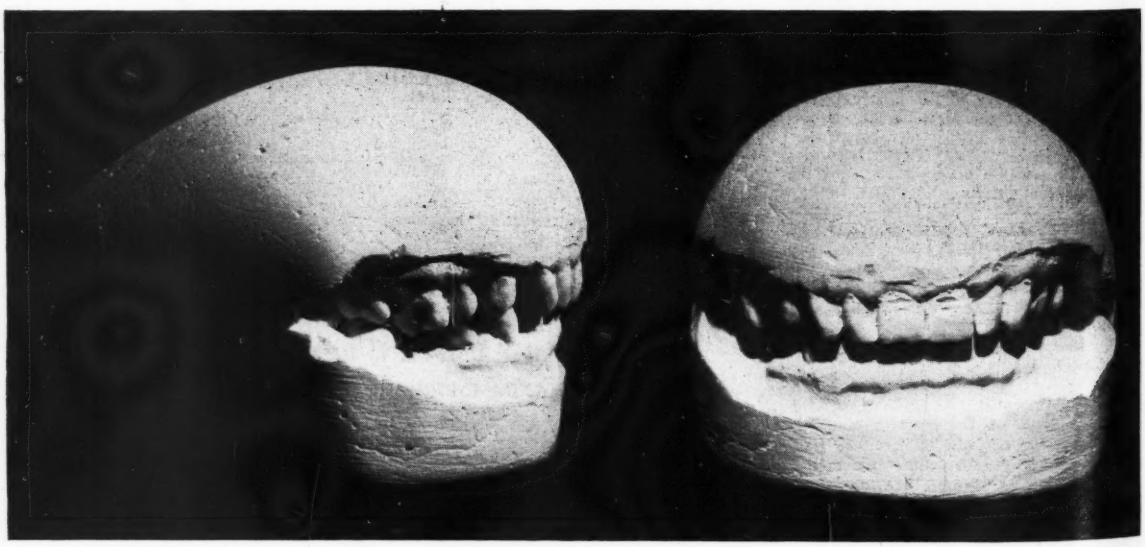
Centric Relation

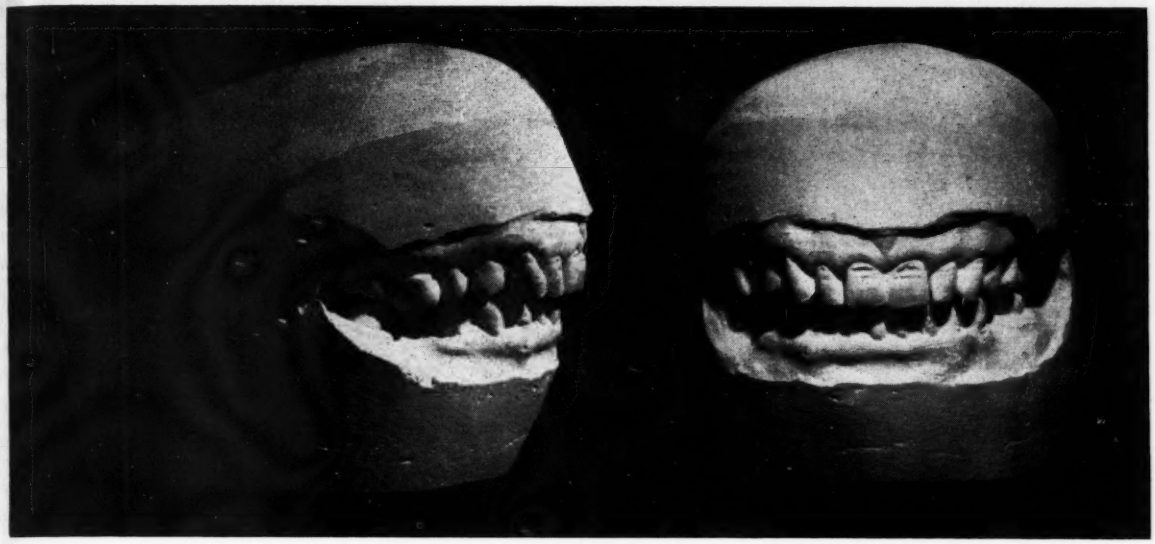
Niswonger[2] describes centric relation as "that position of the mandible in which it is involuntarily suspended by the reciprocal coordination of the muscles of mastication and the depressor muscles, with the upper and lower teeth separated, or the neutral position of the mandible."

In centric relationship of the jaws the muscles are completely relaxed if the jaws are at rest with the upper and lower teeth slightly separated for about 2 to 3 millimeters.

A Constant Relationship—Brodie[3] and Thompson[4] have shown, with the aid of the Broadbent-Bolton cephalometer,[5] that centric relation is always

[2]Niswonger, M. E.: Rest Position of Mandible and Centric Relation, J.A.D.A. **21**:1572-1582 (September) 1934.
[3]Brodie, A. G.: Growth Pattern of Human Head from Third Month to Eighth Year of Life, Am. J. Anat. **68**:209 (March) 1941.
[4]Thompson, John R.: The Rest Position of the Mandible and its Significance to Dental Science, J.A.D.A. **33**:151-180 (February) 1946.
[5]Broadbent, B. H.: New X-ray Technique and its Application to Orthodontia, Angle Orthodontist **1**:45-66 (April) 1931.





2. ***Front and side views of Mrs. M. F. in centric relation. Both jaws are at rest and the teeth are slightly separated (about 2 millimeters.) This space between the upper and lower teeth is the freeway space.***

constant from three months of age throughout life. The constant relationship between the body of the mandible and the maxilla remains regardless of the shrinkage of the alveoli or the presence or absence of teeth.

Freeway Space—The difference in the vertical opening between centric occlusion and centric relation is the freeway space and Thompson has shown that it will average about 2 to 3 millimeters although in abnormal cases it has been shown to be as much as 10 millimeters or more.

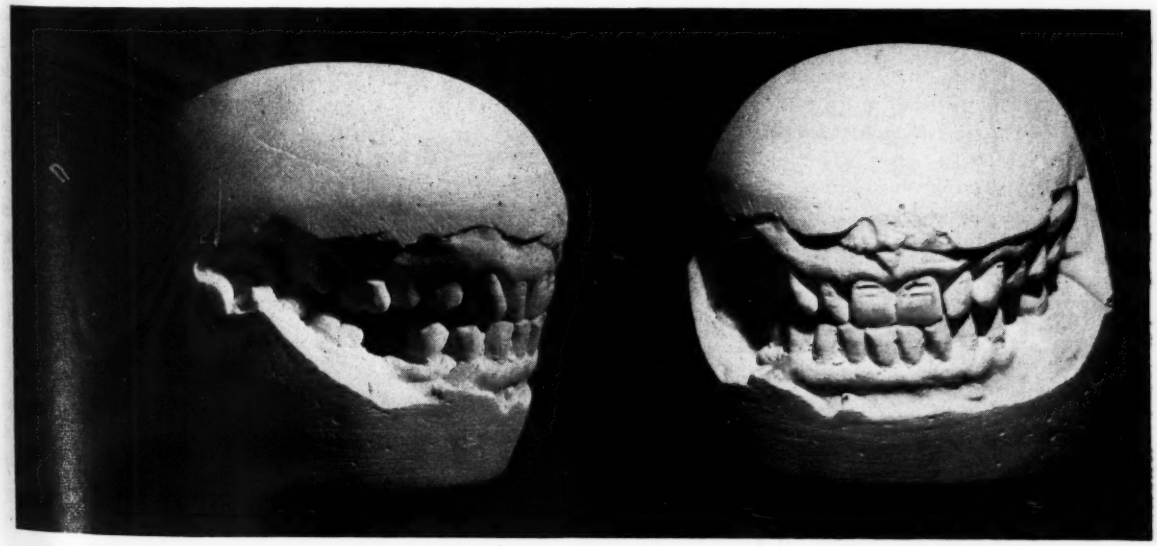
The Third Centric

1. Speaking centric, the third relationship of the jaws, can be noted on a patient in a few seconds without the use of any instrument.

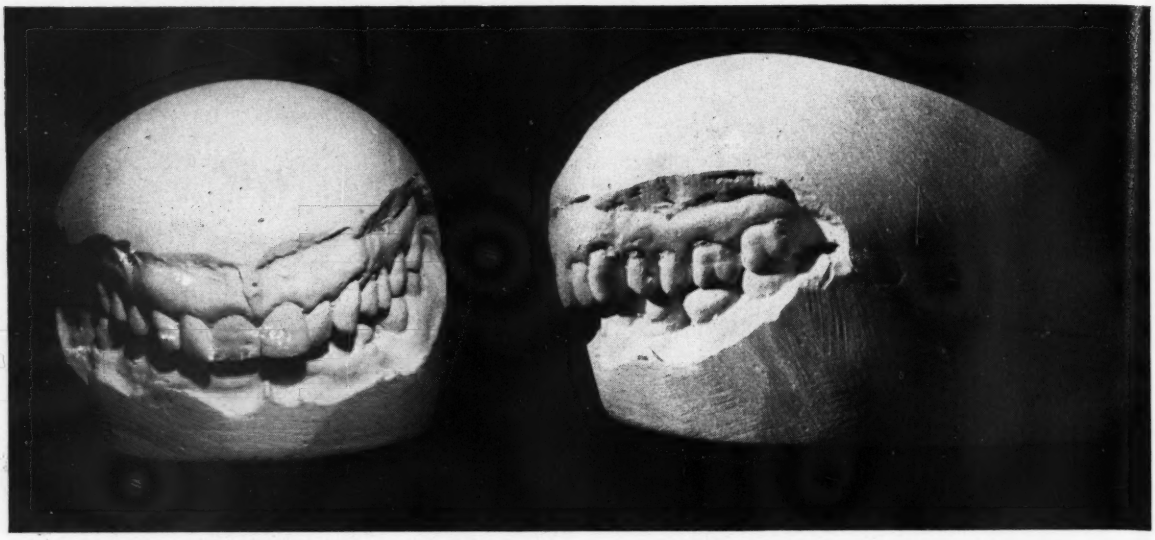
2. It is the closest relationship of the occlusal surfaces and incisal edges of the lower teeth to those of the upper teeth during the function of *rapid* speech.

3. This position is determined by (1) the forces of the muscles of mastication and some cervical muscles[6] which tend to bring the mandible anteriorly or inferiorly to centric relation, or in both directions, during the function of speech (Fig. 3), and (2) the inclination of the anterior walls of the glenoid fossae.

[6]Gray, Henry: Anatomy of the Human Body, ed. 21, Philadelphia, Lea & Febiger, 1924, p. 299.



3. ***Front and side views of Mrs. M. F. during speaking centric. Incisal edges of both upper and lower anterior teeth are in full view on a horizontal level. Note in side view where mandible moves forward to an edge-to-edge position. Separation between upper and lower jaws is greater than separation of centric relation.***



Characteristics of Speaking Centric—1. When a patient speaks while standing, or sitting erect, with face forward (without the use of the headrest) in most cases the speaking centric can be easily noted.

2. The head must *not* tilt forward or backward. It must be normally erect.

3. When the patient speaks or reads quickly, the incisal edges of the lowers and the incisal edges of the uppers will seldom overlap or overbite but will reach their closest vertical relationship (Fig. 3).

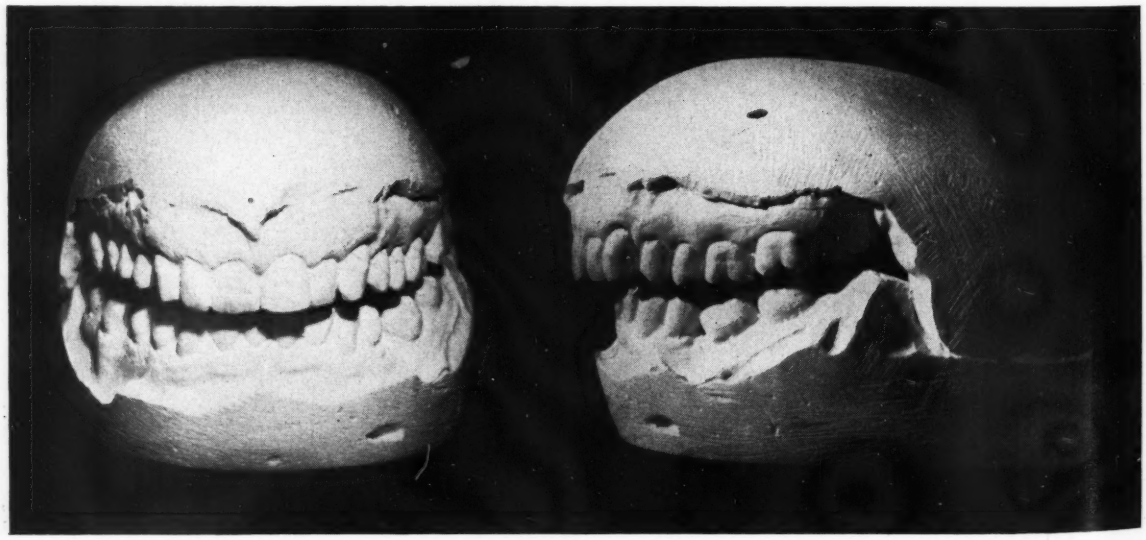
4. When the patient bites back into centric relation (Fig. 2), or centric occlusion (Fig. 1), the mandible swings posteriorly and superiorly with the normal appearance of overbite and overjet as seen on examining the occlusion of most patients.

4. ***Front and side views of the author in centric occlusion. Note overjet is similar to that of speaking centric in Figure 5. There is an overbite in this occlusion but not during the speaking centric as seen in Figure 5.***

5. ***Front and side views of the author during speaking centric. Note similar overjet as in centric occlusion of Figure 4, but no overbite as seen in centric occlusion of Figure 4. This is an example where the mandible does not move forward during speaking centric, but the jaws remain separated to the point where the incisal edges of both upper and lower anteriors are in full view on a horizontal level.***

Comparison—When examining the speaking centric of patients only the relationship of the anterior teeth can be seen which presents a mental picture of the position of the occlusal surfaces of the posterior teeth. By comparing the speaking centric and the centric occlusion, it becomes evident whether or not the mandible comes forward in an anterior direction.

Movements of the Mandible—1. In some patients the mandible is moved forward to an edge-to-edge bite



during speaking centric (Fig. 3).

2. Some patients do not move the mandible anteriorly at all and others move the mandible forward in an anterior direction in varying degrees, but always to a constant position.

3. In most cases there is a second movement of the mandible; namely, in an inferior direction. This movement will open the jaws vertically to a greater degree than centric relation.

Figures 4 and 5—The author's case is shown in which there is *no* forward movement of the mandible during speaking centric. Figure 4 shows the centric occlusion with a deep overbite although in Figure 5 the incisal edges of the lower anteriors are always visible during speaking centric.

The Glenoid Fossae

The forward movement of the mandible during speaking is undoubtedly limited in part by the shape of the glenoid fossae:

1. At the Smithsonian Institution[7] many types of skulls show various degrees of inclines of the articular tubercles or anterior walls of the glenoid fossae.

2. In the American Indian skulls which represent the primitive race, (1) the inclinations of the anterior walls of the glenoid fossae are rather shallow and (2) the teeth are generally worn into edge-to-edge bites (Fig. 6) with flat posterior teeth and little periodontoclasia.

3. In the German skulls, representative of contemporary man, the inclinations of the anterior walls of the glenoid fossae are generally steep and show (1) a lack of tooth wear, (2) loss of teeth, and (3) a vast percentage of overbites of the anterior teeth and much periodontoclasia (Fig. 7).

Conclusions—1. It may be assumed that the more shallow the anterior walls of the glenoid fossae, the less the overbite of the anterior teeth.

2. The steeper the anterior walls of the fossae, the greater the overbite of the anterior teeth.

3. Steeply inclined glenoid fossae tend to prevent the forward movement of the mandible during the function of speech and thereby protect the anterior teeth, which may have severe overbites, from destroying themselves by trauma during this movement.

The Influence of Diet—1. The comparison of the more ideally developed Indian teeth and skulls with the poorly developed German teeth and skulls, proves that civilized diet which lacks abrasive qualities is taking its toll on the teeth of the human race.

2. It may be assumed, therefore, that (1) overbites with steeply inclined glenoid fossae are not normal for the human race but (2) may be normal in a specific case.

3. *As a general rule, overbites in fully developed dentitions must not, therefore, be reduced* (1) *by grinding, or* (2) *by raising the vertical dimensions of the posterior teeth.*

Speaking Centric Applied to Orthodontics

1. Speaking centric is an aid to the orthodontist (1) in the diagnosis and treatment of malocclusion, and (2) in resolving the difference in opinion in the treatment of Class II (Angle) malocclusion, placing treatment on a scientific basis. (Some practitioners advocate the distal movement of the upper teeth. Others favor the forward movement of the mandible.)

2. (A) In addition to the usual methods of diagnosis, the position of the anterior teeth during speaking centric will aid in determining which jaw should be moved, *if moved at all.* Class II (Angle) cases have been seen where interference is inadvisable.

2. (B) Orthodontic movement of anterior teeth must always respect the speaking centric for the following reason: The anterior teeth of the lower jaw are frequently observed to move forward during speaking centric to a point where the upper and lower anterior teeth are in almost an edge-to-edge bite. Moving either jaw would result in trauma of the anterior teeth and possibly their subsequent loss because of periodontoclasia or failure of orthodontic movement.

6. ***In the American Indian skulls, representative of the primitive race, the inclinations of the anterior walls of the glenoid fossae are rather shallow and the teeth are generally worn into edge-to-edge bites with flat posterior teeth and very little periodontoclasia.***

Speaking Centric Applied to Prosthodontics

Problem—A full upper and lower denture with perfect centric occlusion and excellent esthetic results in smiling sometimes reveals in speaking that the lower denture is in a forward relationship to the upper denture with the incisal edges of the lowers in a Class III (Angle) relationship to the upper teeth. When the patient is told to bite, the centric occlusion proves to be normal.

Rechecking—Examining the centric relation, the esthetics are found to be normal. When the patient speaks again, the mandible again comes forward. The following causes may be eliminated: (1) The bite was not opened sufficiently, or (2) the tissue may have shrunk to close the bite.

Solution—The speaking centric must be respected and (1) the upper teeth must be set more anteriorly if esthetics permit, or (2) the lower teeth more posteriorly, if balance permits. In many cases the anteriors must be positioned in the manner described to prevent the displacement or breakage of dentures by the striking of the lower anteriors against the upper anterior teeth during speaking centric.

Problems in Bite Raising

1. Raising the bite has resulted in many failures from many causes.

2. Breitner[8] has shown that in-

[7]Department of Physical Anthropology. U.S. National Museum, Washington, D.C.

[8]Breitner, C.: Further Investigations of Bone Changes Resulting from Experimental Orthodontic Treatment, Am. J. Orthodontics **27**:11 (January) 1941.

creasing the vertical dimension will cause depression of teeth and traumatic changes.

3. Mershon,[9] Tench, [10] and Schuyler[11] have warned against the unscientific trend in dentistry to "bite opening" techniques.

4. Many dentists have learned through personal experience that raising the bite past the normal centric occlusion is a dangerous procedure.

Freeway Space—1. There *must* be a freeway space in the average mouth which must not be encroached upon.

2. The occlusal plane of the teeth must be kept at the plane of *normal* centric occlusion and must not be built up to the point of centric relation.

3. If technique opens the bite beyond centric relation and encroaches upon the horizontal plane of speaking centric, difficulties follow: (1) Muscles become tired, (2) clicking and subluxation of the temporomandibular joints may develop, (3) the teeth may be depressed, and (4) periodontoclasia may result.

4. Centric occlusion must, therefore, be maintained and centric relation and the normal freeway space must not be disturbed.

5. To prevent disaster, the space *between centric relation and speaking centric* must be avoided.

Similar Problems—Problems encountered in bite raising procedures in crown and bridge techniques also apply to prosthetic dentistry. If full dentures are opened close to and past centric relation the same disadvantages may result: (1) Clicking of teeth, (2) abnormal shrinkage of tissue, (3) unnecessary denture adjustments, (4) muscle fatigue, and (5) damage to esthetics.

Speaking Centric Applied to Periodontics

Interference or trauma connected with the movement of the lower anterior teeth against the upper anteriors during speaking centric may be followed by (1) gingivitis and the breakdown of bone surrounding anterior teeth, (2) abrasion and erosion, (3) the crowding of lower anterior teeth, and (4) the spacing of upper anterior teeth.

This is especially dangerous in the presence of abnormal habits such as deliberately or unconsciously striking the lower anteriors against the upper anteriors. The further forward the mandible moves during speaking centric, the greater will be the possibility of abnormal habits to cause damage.

Case Report

Mrs. M. F., aged 57, (Figs. 1, 2, and 3) shows (1) considerable clinical abrasion of her incisal edges and lingual surfaces, and (2) deep erosion of the labial surfaces of the anterior teeth.

History—She used a small amount of lemon juice in former years but did not use it as a daily habit.

Causes of Clinical Conditions—1. The edge-to-edge speaking centric may have contributed to the deep erosion or the mild lemon juice habit or a combination of the two may have caused the erosion.

2. The abrasion on the lingual surfaces is due to the close bite and the incision of foods.

3. The abrasion of the incisal edges are definitely due to the tapping of the upper and lower incisal edges during speaking centric.

4. This patient lost several lower posterior teeth which caused the collapse and malocclusion of the lower jaw with a closed bite.

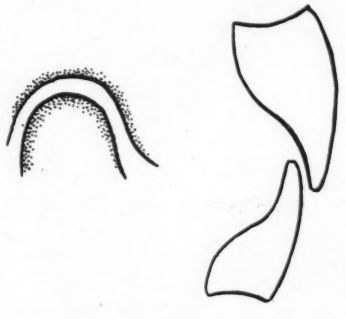
5. The anterior teeth may have elongated causing the upper and lower incisal edges to strike during speaking centric resulting in abrasion and possibly the erosion in the upper anterior teeth.

Inherited Characteristics—1. The patient's mother and grandfather had teeth which resembled her own and were also worn down to an edge-to-edge bite.

2. The patient's son, aged 25, has a speaking centric similar to his mother's. He has no erosion.

3. The patient's son has a full complement of teeth which may prevent his developing similar erosion and spotty abrasion, provided he gets the normal amount of wear and normal eruption of his posterior teeth occurs as shown by Gottlieb.[12]

4. The degree of the forward movement of the mandible during speaking centric seems to be inherited in the same way that other characteristics of the human anatomy are inherited.



***7.** In German skulls, representative of contemporary man, the inclinations of the anterior walls of the glenoid fossae are usually steep and show (1) a lack of tooth wear, (2) loss of teeth, (3) a large percentage of overbites of the anterior teeth, and (4) much periodontoclasia.*

Conclusions

1. The two relationships of the jaws commonly recognized by the dental profession are centric occlusion and centric relation.

2. Speaking centric is a third and newly described relationship of the jaws that must be respected in all phases of dentistry.

3. Speaking centric may be the result of two movements of the mandible: (1) It may move forward to an edge-to-edge bite, not move at all, or move forward in varying degrees. (2) The mandible always moves inferiorly in a vertical direction, and in most patients constantly shows the incisal edges of both the lower and upper anterior teeth at the same time. The lower jaw during speaking centric will constantly remain open more than during centric relation.

4. During speaking centric the lower jaw in some patients has a tendency to come forward. This movement forward is dependent on two

[9]Mershon, J. V.: Possibilities and Limitations in Treatment of Closed Bites, Internat. J. Orthodontia **23**:581-599 (June) 1937.
[10]Tench, R. W.: Dangers in Dental Reconstruction Involving Increase of Vertical Dimension of Lower Third of Human Face, J.A.D.A. **25**:566-570 (April) 1938.
[11]Schuyler, C. A.: Problems Associated with Opening Bite which would Contraindicate it as Common Practice, J.A.D.A. **26**:734-740 (May) 1939.

[12]Gottlieb, B.: Orthodontic Problems in Histologic Illumination, Am. J. Orthodont. **32**:113-133 (March) 1946.

factors: (1) The functional forces of the muscles of mastication and the hammock muscles of the mandible, and (2) the inclination of the anterior tubercles or anterior walls of the glenoid fossae.

5. During speaking centric the incisal edges of the upper and the incisal edges of the lower anterior teeth will seldom pass, or overlap, or overbite themselves. Viewed on a horizontal plane, the incisal edges of both the upper and lower anterior teeth can usually be seen while the patient is *rapidly* speaking or *rapidly* reading from a magazine.

6. Overbite of the anterior teeth is abnormal for most human beings.

7. Overbite of the anterior teeth is normal in particular cases because of nature's adaptation of the glenoid fossae to the tooth arrangement of that dentition.

8. Glenoid fossae with shallow anterior walls are more conducive to development of an edge-to-edge bite.

9. Glenoid fossae with steep anterior walls are some protection to anterior teeth with deep overbites.

10. Speaking centric will show whether an overbite is normal or abnormal. Many dentists have the mistaken idea that all overbites are abnormal and should be reduced to an edge-to-edge bite or as close to that condition as esthetics will permit. If the incisal edges of the upper and lower anteriors do not traumatize each other during that function, it is a sign that the overbite *is* normal for that person and should not be tampered with. If it is abnormal, the incisal edges may traumatize each other and (1) grinding, (2) occlusal reconstruction, or (3) orthodontic treatment may be necessary to prevent periodontal disease and subsequent loss of the anterior teeth.

11. The lower anteriors hitting the upper anteriors during speaking centric may have the following harmful effects: 1. Abrasion of the incisal edges. 2. Periodontoclasia and gingivitis of the upper and lower anterior teeth. 3. Crowding of the lower anterior teeth. 4. Spacing and possible labial erosion of upper anterior teeth.

12. Abnormal habits may cause the crowding of the lower anteriors or the spacing of the upper anteriors as well as various degrees of periodontoclasia. This habit is more harmful in patients whose speaking centric is in a more anterior or forward position.

13. The degree of forward movement of the mandible during speaking centric may be inherited as are other anatomic characteristics of the human body.

14. Opening the bite beyond centric occlusion and encroaching upon centric relation, thereby filling in the freeway space is dangerous. Opening the bite beyond centric relation, encroaching upon speaking centric is a diastrous procedure and invites certain failure in technique.

15. In prosthetic treatment it may be necessary to set the upper anteriors labially or the lower anteriors lingually, if permissable, forming sufficient overjet to allow for the forward movement of the mandible during speaking centric.

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Announcement of Books Received

ORAL DIAGNOSIS AND TREATMENT, by Samuel Charles Miller, D.D.S., Second Edition, Philadelphia, The Blakiston Company, 1946. Price $10.00.

LE BRIDGE "AMORTI," by Julien Prelat, Third Edition, Paris, Julien Prelat, Editeur, 1949.

PSYCHODYNAMICS AND THE ALLERGIC PATIENT, by Harold A. Abramson, M.D., F.A.C.A., St. Paul and Minneapolis, the Bruce Publishing Company, 1948.

NEW GOULD MEDICAL DICTIONARY, edited by Harold Wellington Jones, M.D.; Normand L. Hoerr, M.D., and Arthur Osol, Ph.D., First Edition, Philadelphia, The Blakiston Company, 1949. Price $8.50.

Treatment of ADAMANTINOMA

JOSEPH E. SCHAEFER, M.D., D.D.S.,

and RALPH C. RUDDER, M.D., D.D.S., Chicago

DIGEST

In this case of malignant adamantinoma, surgery had been performed twice following the initial diagnosis five years previously. Massive x-ray therapy had also been applied.

Wide surgical excision of the adamantinoma with removal of the right mandible was completed by the authors of this report with satisfactory results. (1) A minimum amount of disfiguration, and (2) the fact that at the time of writing this report there had been no recurrence of the tumor tissue substantiates the success of the surgery employed.

Case Report

A well-developed, well-nourished woman, aged 30, presented for examination with a complaint of a persistent nonpainful mass in the lower right bicuspid and molar region.

History and Treatment

1. The mass was first noticed five years previously.
2. An operation was performed by a general surgeon four years previously.
3. A second operation was performed two years previously and was followed by massive x-ray therapy.
4. The family history was essentially negative.

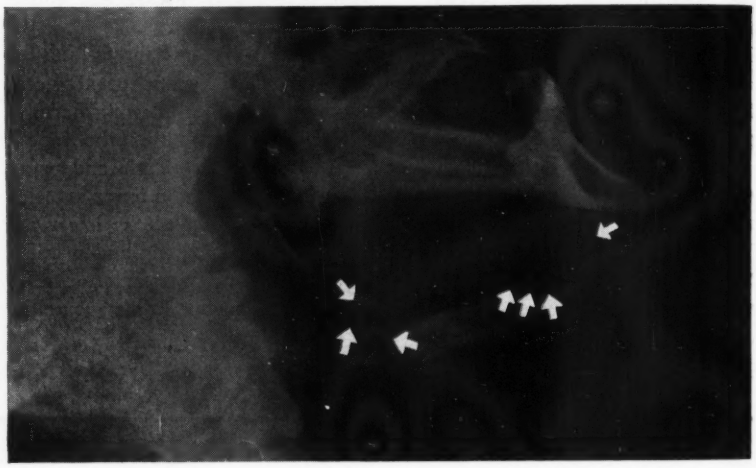
Examination

Local examination revealed (1) an absence of teeth in the lower right bicuspid and molar regions with (2) a soft hemorrhagic mass measuring 3.6 x 2.2 centimeters extending to the lower border of the mandible.

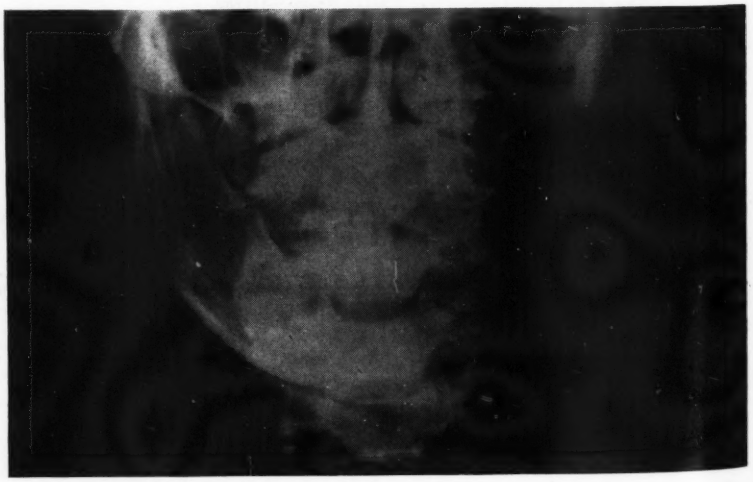
X-ray Examination—A large area of bone destruction was revealed by x-ray in the right body of the mandible with the multiocular appearance found in adamantinoma (Fig. 1). The general physical findings were essentially negative, except for the mass in the right mandible.

Urinalysis—Alkaline; specific gravity 1.009; sugar, albumin, epithelial cells, casts, and pus cells negative.

Blood Count—The complete blood



1. ***Roentgenogram showing bone destruction outlined by arrows in both body of mandible and ramus.***



2. ***Anteroposterior roentgenographic view, showing site of unilateral excision of mandible, leaving right condyle in situ.***

count, including the differential count, was within normal limits: Hemoglobin 88; red blood cells 4,430,000; white blood cells 8,550.

Surgical Technique

Surgical removal of the right mandible from the ascending ramus to the symphysis was performed under general inhalation intratracheal anesthesia. The procedure was the following:

1. The external carotid artery was ligated on the right side, followed by an intraoral incision both lateral and medial to the tumor mass with blunt dissection of the surrounding soft tissue.

2. The periosteum was then stripped from the mandible to the midline. A Gigli saw was passed around the lower border of the mandible at the right cuspid area and the mandible was severed.

3. The anterior border of the mandible was then grasped with a bone forceps and dissected posteriorly well up onto the ascending ramus.

4. Resection one-third centimeter below the sigmoid notch was performed with removal of the right mandible.

5. The mucous membrane was closed with Number 2 black silk suture.

Pathologic Report

1. The specimen removed consisted of the right mandible and two pieces of tumor mass.

2. The mandible measured overall, 9.4 x 4.0 x 1.3 centimeters with erosion throughout and a small amount of soft gray tumor attached to the bone.

3. The two tumor masses measured 5.3 x 2.2 x 1.5 centimeters, and 3.5 x 3.0 x 1.8 centimeters with irregular shapes and composed of light and dark gray tumor mass. Small portions presented an encapsulated appearance.

Diagnosis

The microscopic diagnosis was that of a malignant adamantinoma.

Postoperative Course

Recovery was uneventful and the patient was dismissed from the hospital on the tenth postoperative day with a minimum amount of disfiguration. Examination six months later revealed no recurrence (Figs. 2, 3, and 4).

3. ***Basal roentgenographic view, showing missing one-half of mandible, with condyle in situ, which will be used to attach a subsequent bone graft to supply the missing bony structures.***

4. ***Note small amount of facial disfigurement after removal of one-half of mandible.***

804 *West 79th Street.*
25 *East Washington Street.*

MOUTH RECONSTRUCTION—

Outline of Technique

MORTIMER C. DAVIS, D.D.S., Jersey City, N.J.

DIGEST

The objective of oral reconstruction is to restore as nearly as possible the function and esthetics of the mouth. (1) Arch form, (2) orientation of the plane, (3) tooth position and form must be visualized from the study models and other preliminary observations.

The use of the anatomic articulator is advocated as a means of achieving the desired results. If the operator will bear in mind that occlusal harmony is the most important factor in the result, other requirements, such as esthetics and arch form, will become easier to attain.

Extensive reconstruction should be approached from the standpoint of full denture construction. The same techniques do not necessarily have to be applied. For successful dentures, however, basic theoretic and practical requirements and physical and physiologic laws must be observed. The correlation and application of these principles to oral reconstruction is necessary for successful results.

Categories of Case Types

Reconstruction cases in general vary from the mouth with a full complement of teeth to the edentulous upper and lower jaws. The variations are innumerable and the techniques which produce the final result also vary greatly. It has been found, however, that the types of cases can be placed in four broad categories:

Category One—Cases in which there has been no loss of vertical dimension, with many teeth present and small edentulous spaces.

Category Two—Cases in which there has been no loss of vertical dimension, with few teeth present and large edentulous spaces.

Category Three—Cases in which there has been loss of vertical dimension, with many teeth present and small edentulous spaces.

Category Four—Cases in which there has been loss of vertical dimension, with few teeth present and large edentulous spaces.

Classifications Overlap

There is no absolute dividing line between the categories. Many cases have quite a few teeth present and yet there may be large edentulous spaces. The distribution of the remaining teeth govern to a large extent the categorical placement of the individual case:

1. A case in which there are eight lower anterior teeth (from first bicuspid to first bicuspid) might properly be placed in Category Two. Full dentures might be considered the extreme limit of Category Four.

2. A case in which there are six teeth present (two molars and a first bicuspid on each side) might properly be placed in Category One.

Similar Techniques—The only difference in technique in the evolution of the cases in the first two categories involves the use of baseplate and wax adapted to the edentulous spaces and employed to facilitate the registration of centric. It is not important, therefore, which technique is employed when one category encroaches upon another.

Reconstruction May be Required—Full tooth dentitions may require reconstruction. Such cases correspond more closely to Category One or Category Three (depending on the loss, or not, of vertical dimension) but not quite because there are *no* edentulous spaces. Full upper and lower dentures may be considered the extreme limit of Category Four. It is evident, therefore, that the listings must be only in general terms.

Type of Placement Required

Consideration must be given to the type of replacements planned. They may be (1) fixed, (2) removable, (3) precision attachments, or (4) clasp. The decision should be made during the diagnosis and treatment planning phase of the case evaluation. The advocated technique does not vary greatly in its procedure except when the final construction of the replacements is begun.

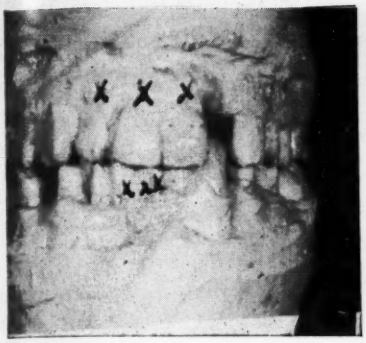
Qualifications of a Satisfactory Restoration—Full coverage of all abutment teeth should be the rule. These may be (1) cast crowns, (2) acrylic veneers, or (3) porcelain jacket crowns. A satisfactory restoration should (1) have excellent marginal fit and (2) be strong enough to withstand masticatory stress without breaking.

Choice of Materials—A thorough knowledge of their physical properties is the factor which governs the choice of materials.

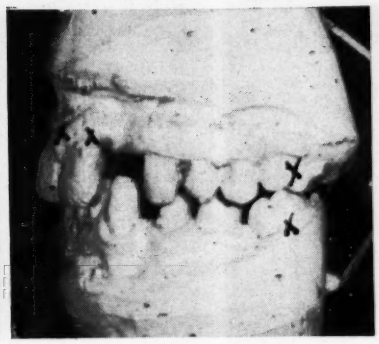
Fundamental Objectives of Technique

1. Working models must be mounted on an anatomic articulator.

2. Registrations must be accurate.



1. ***Study models, anterior view. Doomed teeth are marked.***



2. ***Study models, left side.***

3. ***Study models, right side.***

3. Dies of the prepared teeth must be in their *true* position.

4. Vertical dimension must be correct.

The following definite steps must be taken to accomplish the four fundamental objectives:

The Transfer of Coping—This is a casting made of low-fusing metal which (1) accurately fits an amalgam or copper-plated die of the prepared tooth and (2) is used to position the die accurately in the impression.

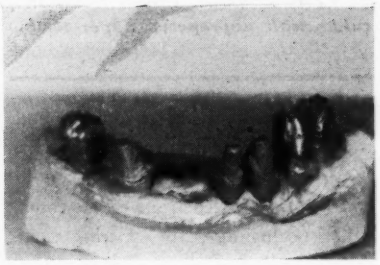
Method—1. The die is lubricated and waxed.

2. Dots of inlay wax are placed over the surface of the pattern to assist in retention later by the plaster impression.

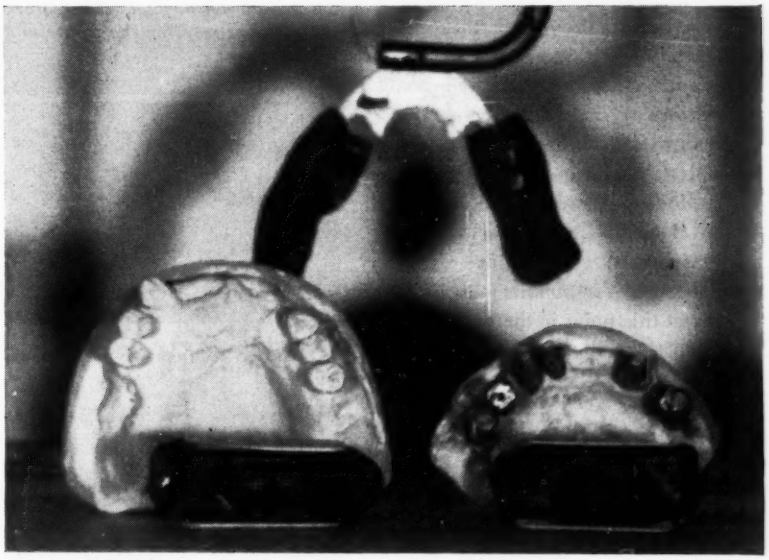
3. The pattern is invested in inlay investment, burned out, and allowed to cool to room temperature.

4. The ring is then placed on the casting machine and low-fusing metal cast into the cold mold. The casting should fit the die accurately.

4. ***Transfer copings of lower prepared teeth in position in plaster impression.***



5. ***Low-fusing metal crown forms constructed to contact opposing teeth at the existing vertical dimension.***



6. ***Registrations for mounting. The upper teeth have not as yet been prepared.***

Category One

Cases in which there has been no loss of vertical dimension, with many teeth present and small edentulous spaces.

Reconstruction of One Jaw

In this type of case either the lower or the upper jaw is fairly normal with almost or all teeth present, arch form normal, and plane of occlusion normal.

1. Prepare the teeth on one side.

2. Take compound band impressions of the individual teeth present.

3. Pack amalgam dies or copper plate.

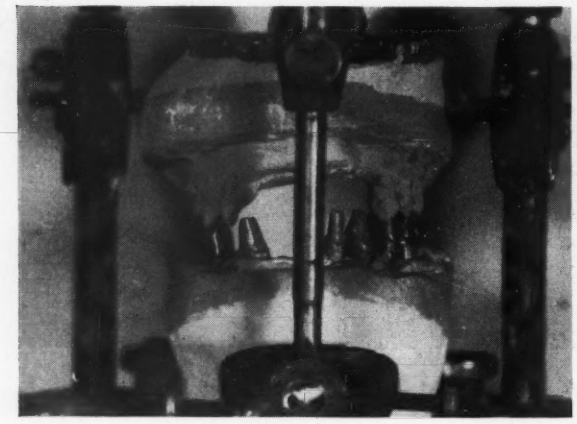
4. Construct transfer copings for each die.

5. Place transfer copings on teeth and take a plaster impression. The copings should come off in the impression.

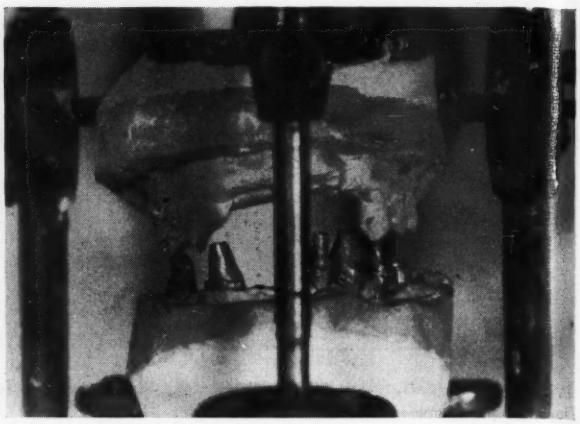
6. Take wax bite registration of the prepared side.

7. Seat dies in their respective transfers and pour articulated models.

8. Wax crowns to the occlusion.



7. *Casts mounted. Crown forms in position on dies articulate with unprepared upper teeth.*



8. *Crown forms removed.*

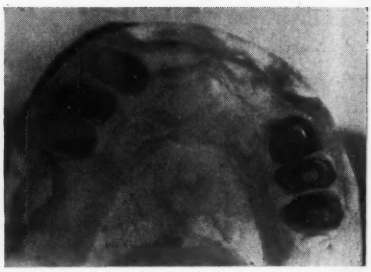
9. Cast crowns in low-fusing metal.

10. The same bite relationship has been maintained on the first side by constructing the castings to the established occlusion at the existing vertical dimension. The procedure (steps 1 to 10, inclusive) is repeated for the other side.

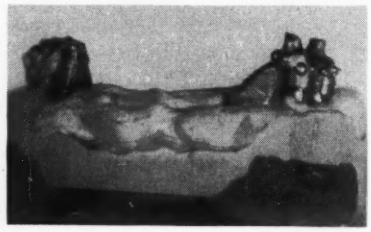
Crown Forms—Steps 6, 7, 8, and 9 add to the amount of time consumed but it is time well spent because the base metal crowns are used as crown forms and can easily be removed during various try-ins of the case. The crowns are also utilized later in the procedure.

Not Made as Regular Gold Castings—The crown forms should not be made as regular gold castings which could be used for abutment castings because at this point in the procedure it is impossible to make these castings to functional occlusal balance, a requirement possible to fulfill later in the procedure.

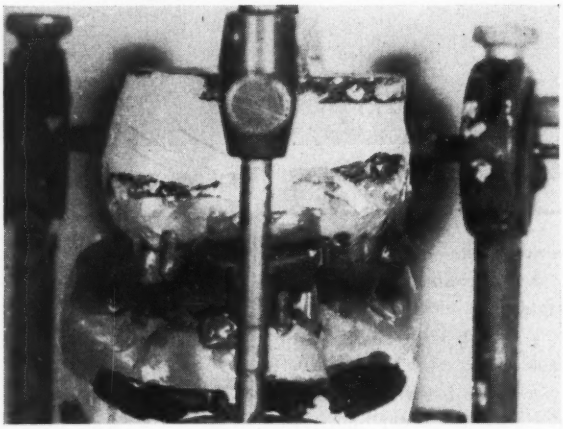
9. *The two upper cuspids prepared and transfers constructed. Temporary acrylic splints made for the upper and lower anteriors.*



10. *Dies of upper prepared teeth in position in model. Occlusal view.*



11. *Transfer copings in position on upper dies.*



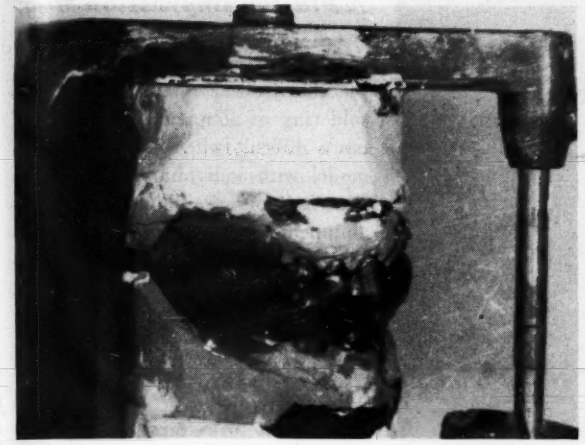
12. *Casts mounted by means of base plates (corrected with impression paste) and wax rims.*

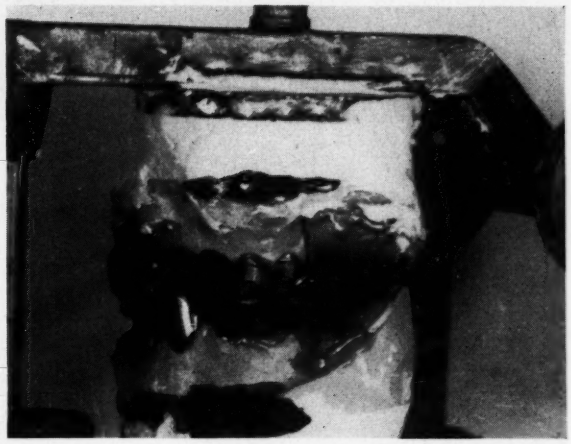
Two Sets of Castings—1. There will now be two sets of castings for the prepared teeth: (1) the transfer copings for the individual teeth, and (2) the base metal covers constructed to the existing occlusion.

2. The crown forms are cemented on the prepared teeth with a thin mix of zinc oxide and oil of cloves-balsam mixture. This material is convenient to use as it does not have to be cleaned out and remixed each time. It also provides satisfactory pulp protection.

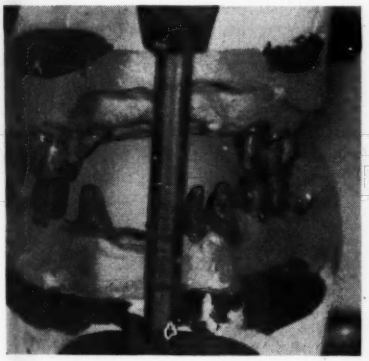
3. With all transfer copings in position, a plaster impression is taken of the entire jaw. As the opposing jaw is not being reconstructed, a satisfactory alginate impression is all that is required.

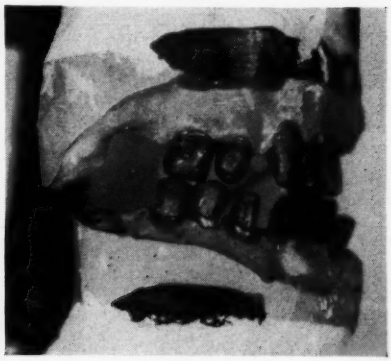
The Crown Forms in Position—1. At the next sitting centric registrations are taken in wax, face bow, and protrusive records are made with the





13 *and* **14.** ***Right and left sides. No new face bow registration was necessary since the upper cast has been mounted. The lower cast was mounted previously (Fig. 7).***





15, 16 *and* **17.** ***View of articulated casts with crown forms in position and contacting in centric occlusion at the same vertical dimension.***

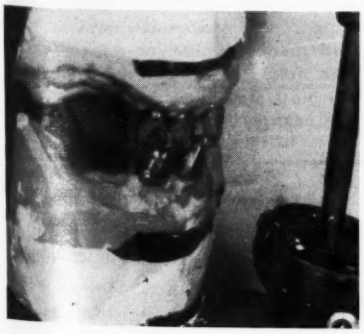
crown forms in position on the teeth.

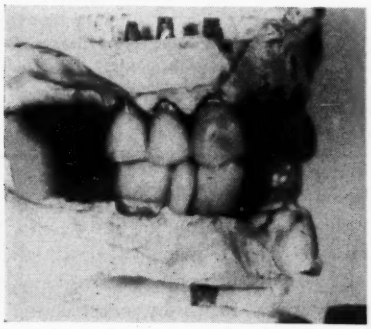
2. These crown forms have been made to precise occlusal contact so that it is easy to transfer them to the dies in position on the model and articulate the upper and lower models by means of the registrations.

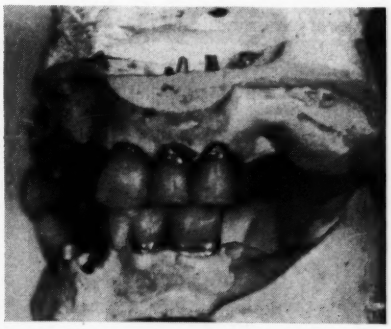
3. This procedure does not take more than a half hour in the laboratory. The patient can wait until the crown forms are returned to his teeth.

The fundamental objectives of the technique are now achieved. The casts have been mounted on an anatomic articulator with the dies in their true position, with correct registrations, at the desired degree of opening.

Completion of the Case—1. The



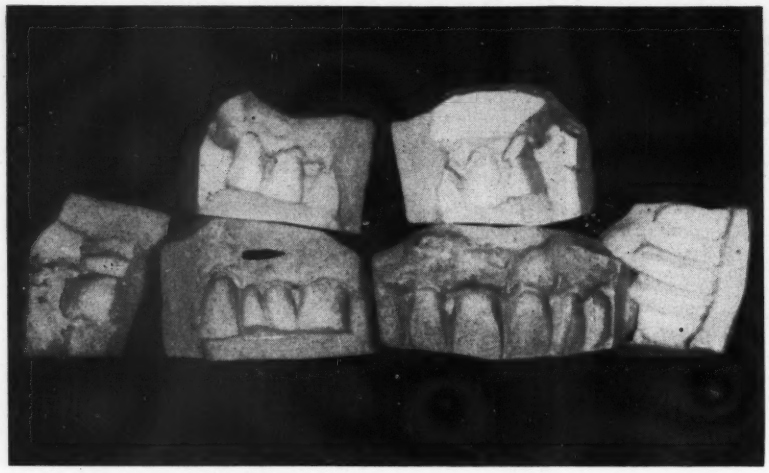




18. ***Gold castings constructed to proper vertical dimension and ready for waxing.***

19. ***View of wax-ups on right side in centric and working bite. The waxing was done on the posterior teeth first and the lateral excursions worked out in the wax.***

20. ***Left side wax-up, centric, and working bite.***



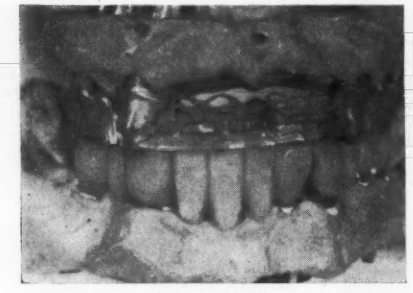
21. *The wax-up was completed for both the upper and lower before the frameworks were assembled. Plaster indexes were made of the labial of the wax-up.*

A Plaster Impression May be Taken

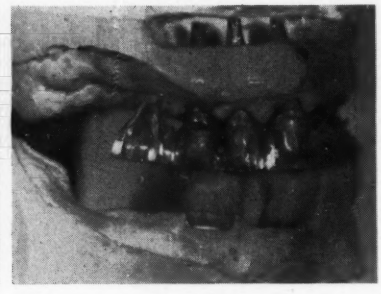
1. If the construction of final replacements and operations such as soldering of abutments is considered more difficult when evolved from a model with individual dies in position, it is permissible (1) to seat all abutment castings on the teeth involved, and (2) to take a plaster impression of the arch.

2. The impression is poured with low-fusing metal into the fluxed castings and a hard stone vibrated carefully to complete the model.

3. If this procedure is followed it becomes necessary to take a new wax centric registration and mount the model on the articulator.



22. *The upper framework fabricated and assembly of all upper units completed. The lower wax-up is still intact but the framework has not been made yet.*



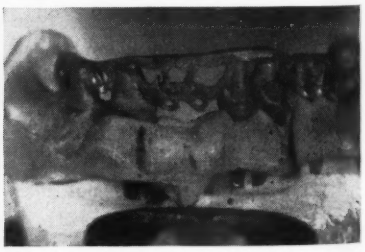
23. *Right side of upper framework in centric occlusion.*

24. *Left side of upper framework in centric occlusion.*

abutment castings are constructed with attention to centric and eccentric contact in function.

2. The fit of the abutment castings is verified on the teeth by x-ray and explorer examination.

3. The required replacement, either fixed or removable, is constructed with the same attention to functional balance.



25. *Completed upper occluding with assembled lower framework. The upper was processed in three stages, first the posterior segments separately, and then the anterior segment. This was done to prevent dragging when the flask was opened and closed.*

26. *Close-up of lower assembly.*

Reconstruction of Both Jaws

It is often necessary (1) to reestablish the plane of occlusion, or (2) to give the patient a smoother path of mandibular movement (in cases of tipped or extruded teeth.) By following the same method as the first step described in the procedure for Category One, this can be accomplished with a minimum of difficulty.

1. The lower plane of occlusion can be established with the low-fusing metal crown forms by constructing them to occlusal contact with a spherical bite plate.

2. The upper teeth are then prepared, one side at a time.

3. Similarly, crown forms and transfer copings are constructed. In this way the vertical dimension is maintained.

4. The various registrations described are then made.

5. Plaster impressions of both jaws with the transfer copings in position are taken.

6. The crown forms are replaced on the teeth and the patient dismissed.

7. The dies are seated in their respective positions and the models poured.

8. When the patient returns a wax record is taken of centric position; protrusive and face bow records are made.

9. The crown forms are removed from the teeth and placed on the dies.

10. The models are articulated by means of the wax registration and the models are mounted on the anatomic articulator. The upper is mounted first by means of the face bow registration.

Vertical Dimension is Maintained—The articulator pin is closed down until the crown forms come into contact. This automatically maintains the same vertical dimension as the case presented. Again the result is articulated models with dies accurately seated and the correct vertical dimension, the fundamental objective of the technique, established.

Completion is Routine—Construction of the restorations proceeds routinely with attention to functional balance.

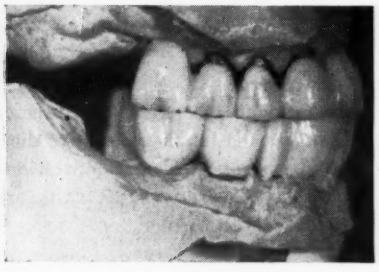
27. ***View of inside of bridge. Note that all castings provide shoulder coverage in gold. There are no "acrylic margins."***

28. ***Occlusal view of completed upper. All occlusal and incisal contact made on the gold stops are for centric and eccentric movements.***

29. ***View of left side of lower assembly in centric occlusion with completed upper.***

30. ***View of right side of lower assembly in centric occlusion with completed upper.***

31. ***Anterior view of completed cases. (The plaster indexes (Fig. 23) were used to rewax the cases over the assembled frameworks).***



32. ***Completed cases; right side.***

33. ***Completed cases; left side.***

Category Two

Cases in which there has been no loss of vertical dimension, with few teeth present and large edentulous spaces.

1. Presumably there has been no loss of vertical dimension, so there would be at least one contacting tooth on each jaw before treatment is

34. ***Occlusal view of completed lower. Note shallow occlusal anatomy and presence of occlusal escapeways.***

35. ***Completed case in mouth, right side, working side excursion.***

36. *Completed case in mouth, left side, working side excursion.*

37. *Anterior view of completed cases in centric occlusion.*

started. By first constructing the crown form on one side to the existing occlusion, the same amount of opening is maintained.

2. Teeth are prepared and transfers constructed as previously described.

3. Plaster impressions are taken with the transfer copings in position.

4. The dies are seated and a model poured in hard stone. In order to insure accuracy of the bite registration, baseplate is adapted closely over the edentulous spaces. The model is then tinfoiled, the baseplate is filled with a zinc oxide-eugenol impression paste and pressed to place over the tin-foiled cast. The cast is placed in warm water until the impression paste hardens.

5. Take the usual face bow and centric wax registrations and mount the casts on the articulator.

6. The low-fusing metal crown forms are placed on the dies and the vertical dimension set by bringing them into contact.

Category Three

Cases in which there has been loss of vertical dimension, with small edentulous spaces and many teeth present.

Vertical Dimension Must be Obtained—The technique employed in this situation is the same as for Category One except for one detail: The correct vertical dimension must be established by the operator and some means must be employed of determining it accurately. Many techniques and instruments are used for this purpose but none is *scientifically* accurate. The judgment and experience of the operator are important. The freeway space must be maintained; this can vary in height according to (1) the amount of closure present before treatment, (2) the condition of the mouth, and (3) the age of the patient.

The Use of Temporary Splints—In some cases temporary splints in gold, acrylic, or stainless steel are constructed to give the patient a chance to adjust himself to the new vertical dimension.

Category Four

Cases in which there has been loss of vertical dimension, with few teeth present and large edentulous spaces.

The same routine is followed: 1. The teeth are prepared and transfer copings made for the respective dies.

2. By means of plaster impressions and wax registrations the casts are mounted on the articulator.

3. The vertical dimension is reestablished and the restorations constructed. Baseplates, corrected by impression paste, are used to increase the accuracy of the registration records.

Conclusions

The following measures contribute to success in oral reconstruction:

1. Careful step-by-step planning of the case.

2. The consideration of side treatments such as periodontal, surgical, and operative treatments.

3. The preconception of the final result.

4. Carrying out a definite, step-by-step technique.

115 *Bentley Avenue.*

Hypnosis in Treatment

The Value of Hypnotherapy

After waking from the hypnotic trance the subject has no recollection of the suggestion which the hypnotist has given him until it arises in his mind, apparently *de novo*, at the stated time or occasion. The value of posthypnotic suggestion for therapy lies almost entirely in its enabling the patient to do something which he badly wants to do but which he is ordinarily prevented from doing, and not in compelling him to do something which he does not wish to do.

Variability in Ease of Suggestibility

1. Some subjects fall at once, without any suggestion given to this effect, into a cataleptic and anesthetic state, and others show few, if any, signs of this.

2. Some patients, while hypnotized, seem to have a general clouding of consciousness.

3. In others there is a much greater degree of dissociation between one function which is depressed and others which are maintained in normal alertness and responsiveness.

4. All normal persons, if fully cooperative, are probably capable of being put into a hypnotic state which can be induced more easily and made progressively deeper with practice.

No Evidence of Harm from Hypnotism

Although there is no evidence that in capable and conscientious hands hypnotism, repeated as many times as desired, carries with it any physical or psychologic danger to the patient, it is unlikely that many doctors will make use of it in their practice, for the reason that the technique of inducing the hypnotic state consists in telling the subject with the greatest conviction and impressiveness something that is not strictly true. The patient must be told for instance, that his limbs are feeling heavy, his lids droop, and he is becoming sleepy. Such things have to

(*Continued on page* 141)

The Technique for an APICOECTOMY

JACK F. CATHCART, D.D.S., Berkeley, California

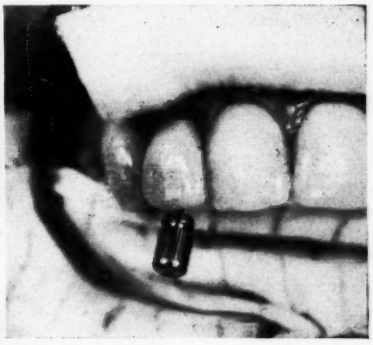
DIGEST

The prosthodontist is engaged chiefly in restoring teeth or replacing teeth which have been lost through disease or injury. Because the pulps of most of these teeth have already been subjected to abuse before the prosthodontist sees the patient, the mortality rate of the pulp is relatively high.

Before he starts the preparation for a jacket crown or bridge abutment, the dentist should warn the patient that there is a possibiliy of future trouble with the teeth being treated. The patient will be retussured when told that (1) should an abscess form on an anterior tooth on which a restoration (a jacket crown or bridge abutment) has been placed, an apicoectomy can be performed, (2) the tooth can still be retained, and (3) the restoration can be used.

1. *X-ray of an infected tooth.*

2. *Picture of lateral showing fistula formation.*



3. *Root canal reamer in canal of lateral.*

4. *X-ray of reamer in root canal extending through apex of the tooth into abscessed area.*

5. *Gutta percha canal point in position testing for length to be certain point goes beyond apex.*

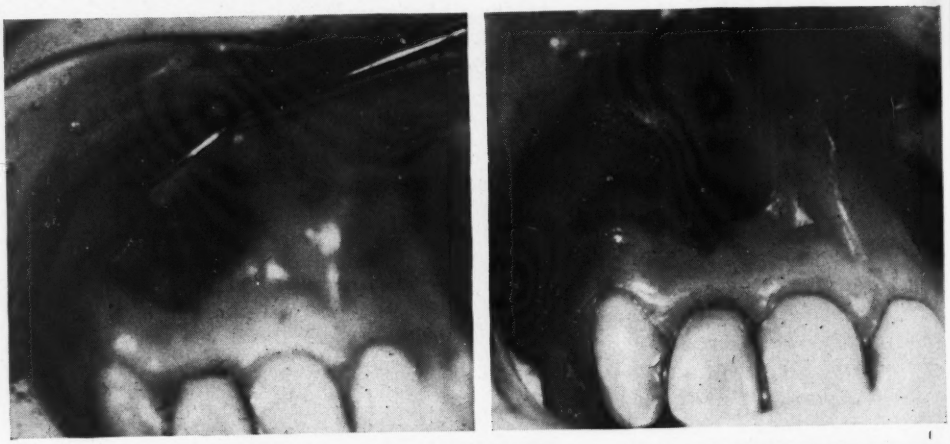
6. *Gutta percha point, placed with inert germicidal cement, showing beyond the apex with surplus filling also beyond the apex.*

7. *Left: Initial incision to perilabial semicircular osteum made large enough to give adequate access to the apex.*

8. *Right: Gum flap retracted, exposing bony structure in infected area.*

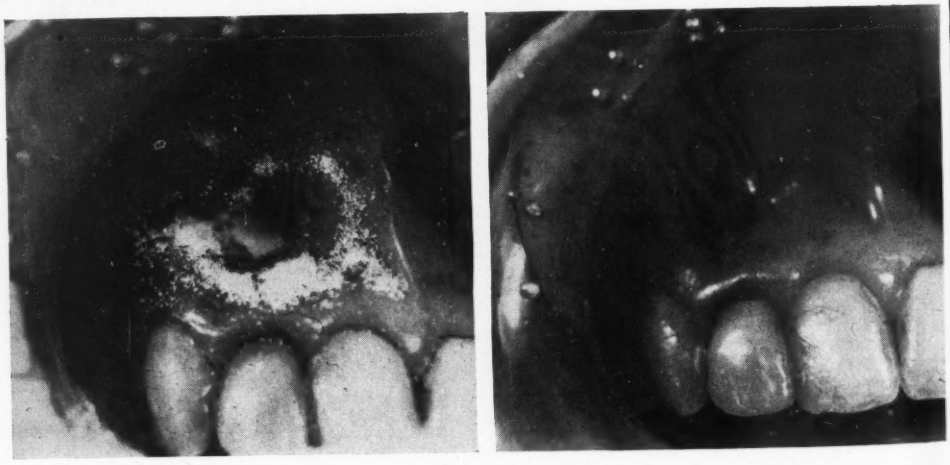
9. *Left: Labial plate of bone cut away with bur, exposing infected tissue.*

10. *Right: Approximately one quarter of root tip cleanly cut off with fissure bur. Tip removed with infected tissue and surplus root canal filling. Area thoroughly curetted to solid bone.*



11. *Left: Area covered with penicillin-sulfonamide powder blown in with a powderlator.*

12. *Right: Gum flap sutured to closure.*



Technique

To perform an apicoectomy the following steps should be taken:

1. The infected tooth must be treated.

2. The root canal must be thoroughly reamed and all debris removed.

3. The root canal must be overfilled with an inert potent germicidal filling.

4. Approximately one eighth of the root tip should be cleanly cut off and resected.

5. Every trace of infected tissue and debris must be curetted and removed until nothing but sound bone structure remains.

6. The curetted socket should be treated (1) with penicillin-sulfonamide powder if the patient is not allergic to it, or (2) with a strong noncaustic antiseptic before the opening is sutured and closed.

13. *Picture of root tip attached to end of paper clip for comparison of size.*

14. *X-ray of completed apicoectomy. Check-up x-rays should be taken at the end of one month, three months, and after that at least once a year.*

Prognosis is Excellent

Since the introduction of penicillin-sulfonamide powder, the prognosis for success of apicoectomies approaches 100 per cent if the operation is carried out with a definite technique and meticulous care. The necessity for the placement of drains or packs for proper healing is also precluded.

Conclusions

1. By using the technique described for apicoectomy, many valuable anterior teeth which would otherwise have to be extracted, can be retained.
2. The tooth should be checked by x-ray every six months until the success of the operation is ensured and it is seen that the area is being normally filled with new bony formation.

701 *American Trust Building.*

Postural Defects of the Spine and their Relation to the Dental Position

JAMES P. COLE, M.D., D.Sc. (Med.), Buffalo, N.Y.

I UNDERSTAND that there is some controversy in the dental profession as to the use of a sitting position while working on the patient. I do not wish to discuss whether or not such a position is awkward. As far as body mechanics is concerned, as I demonstrated, the sitting position will afford relief by placing the lumbosacral angle at a more horizontal plane as the weight thrust is then at its minimum. At the same time, the sacrospinalis groups of muscles are under a minimum degree of stress and will not become fatigued as easily. The sitting position, however, also has disadvantages. Although more comfortable, this position, if assumed for long periods of time, will cause relaxation of the abdominal muscles which are so important for good body function. It would seem that if one is suffering from disability in the lower back, the sitting position should be maintained for a fair interval, but the upright position should be maintained at times. However, it is most essential for the person to increase muscle tone of both groups of muscles by exercises which can be learned in a few minutes and practiced for a few minutes each day.

From *The New York State Dental Journal* **15**:563 (December) 1949.

We Can't Pay You, But—

NO DENTAL author can ever be *paid* for a valuable technical or scientific article. The value of such material is above a monetary basis. In the preparation of a technical article, however, an author often expends money for drawings, photographs, models, or graphs. We should like to help defray some of these expenses.

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If you have a constructive idea, an innovation, a new result of tried and proved experiment, put it down in writing, illustrate it, and send the material to: DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

We can make suitable black-and-white cuts from Kodachrome transparencies.

We hope that you will accept this invitation!

PRESSURE MATRIXES

for Acrylic Restorations

HENRY I. MEYER, D.D.S., Peekskill, N.Y.

DIGEST

The introduction of an acrylic restoration material which processes at mouth temperature fills the need for a material to replace silicate cement in the restoration of anterior teeth.

Because of the following characteristics acrylic plastic is the most promising element available for this purpose: (1) Ease of manipulation, (2) insolubility in mouth fluids, (3) ability to withstand masticatory stresses, and (4) excellent color.

In order to produce a restoration substance uniformly dense and hard, it is necessary to maintain a matrix under steady pressure for approximately ten minutes. Attempting to accomplish this with finger pressure on a steel band, plastic strip, or other form of matrix is virtually impossible. This method results in (A) an imperfect restoration and (B) fatigue for both the operator and the patient. A form of mechanical retention for the matrix is, therefore, essential if satisfactory results are to be obtained with the least effort.

Various methods for matrix retention in the three classes of cavities in anterior teeth, Classes III, IV, and V are described.

Class Three Technique

1. A thin stainless steel matrix is cut long enough so that the ends will overlap at least one-half the labial and lingual surfaces of the adjacent tooth when the matrix is in position.

2. The retaining device for this class of cavity is a wedge separator with the sharp points blunted to a rounded contour. This is necessary if the device is to stretch the matrix tightly across the tooth rather than pierce the matrix under initial pressure.

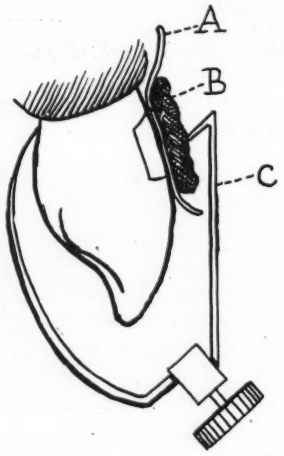
3. The steel matrix is placed in position with a wooden wedge to adapt it tightly at the gingival border of the cavity.

4. The lingual portion of the matrix is held firmly against the tooth while the cavity is slightly overfilled from the labial aspect.

5. The labial portion of the matrix is drawn tightly across the tooth.

6. The points of the wedge separator are placed against the steel matrix at the interproximal space opposite the side of the tooth which is being restored.

7. The thumb screw is tightened, creating the necessary pressure of the matrix against the restoration. The matrix is left in position for the proper length of time (Fig. 2).



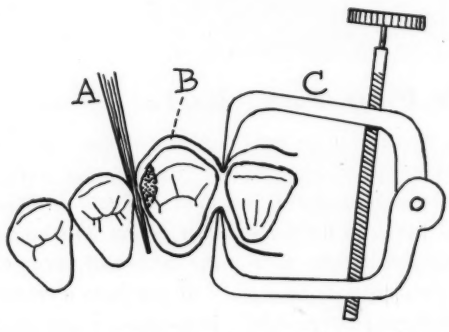
1. *(A) Cellophane. (B) Compound. (C) Gum depressor clamp.*

Class Four Technique

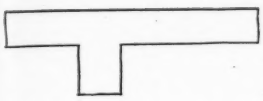
1. In this class of cavity (1) the wedge type separator described in Class Three and (2) a steel matrix cut in the shape of a T are used.

2. The matrix is placed in position with a wooden wedge at the gingival.

3. The incisal edge of the horizontal bar of the T must be in a continuous line with the incisal edge of the tooth.



2. *(A) Wedge. (B) Steel matrix. (C) Clamp.*



3. *T matrix.*

4. One side of the vertical bar of the T must be in line with the side of the tooth which is being restored (Fig. 4).

5. After the acrylic restoration has been inserted, the vertical portion of the T matrix is turned up over the labial face of the tooth.

6. The horizontal portion is then carried over the vertical portion to the opposite side of the tooth and the wedge separator is placed in position as described under the heading of Class Three.

An Alternate Method—A technique which involves the use of a corner of a plastic crown form and a steel matrix may be preferred. This method produces an incisal edge which requires less trimming upon removal of the matrix. The steel matrix is a straight band similar to that used in a Class Three cavity.

Method—1. A suitable crown form is selected. A segment, large enough to cover all cavity margins is cut from the crown form.

2. On the labial face, just above and parallel to the incisal edge, a cut is made (Fig. 5).

3. The crown is placed in position on the cavity side of the tooth.

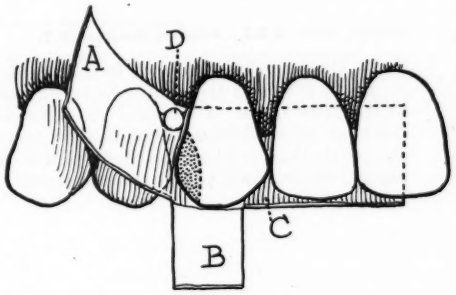
4. The steel matrix is placed over the crown form and a wooden wedge is put in position at the gingival.

5. The horizontal cut on the labial surface of the crown form allows the labial face to be turned away from the tooth so that the restoration may be inserted after the double matrix is in position.

6. After insertion of the acrylic, the labial face of the crown form is replaced over the tooth, followed by the labial portion of the steel matrix.

7. The wedge separator is then clamped in position in the manner described previously.

New Implement Desired—The wedge separator does not always give the required compression of the steel matrix at the incisal because of a tendency to bulge in that area. Efforts are being made to correct this fault and it is hoped that a more efficient instrument for this purpose will be developed.



4. *(A) Horizontal labial flap. (B) Vertical flap (to be folded upward.) (C) Horizontal lingual flap. (D) Wedge.*

5. *Dotted line shows horizontal cut on labial face of crown form.*

Class Five Technique—

1. A small block of compound is softened on one face and an accurate impression of the labial surface is made. This may be done before the cavity is excavated.

2. The outline of the carious area is then scraped out of the compound impression to give a smoothly contoured labial face.

An Alternate Method—1. Prepare the cavity, fill it with a temporary stopping or inlay wax, cover with a lubricant, and make the compound impression.

2. After the acrylic restoration material has been prepared to the proper consistency and the cavity slightly overfilled, the compound matrix is applied over the labial surface with a thin piece of moist cellophane interposed between it and the restoration material.

A Soft Tissue Depressor—1. Placing the lingual finger in position first, a soft tissue depressor clamp is applied.

2. The two labial fingers are then placed across the center of the compound matrix and the thumb screw is turned down tightly.

3. The small, sharp prongs of the labial arms will plunge into the compound which prevents slipping. Further pressure from the thumb screw creates the necessary pressure on the matrix against the acrylic restoration. This is left in position for approximately ten minutes (Fig. 1).

4. A compound matrix form may be made large enough to cover two or three teeth in order that multiple gingival restorations may be inserted at one time.

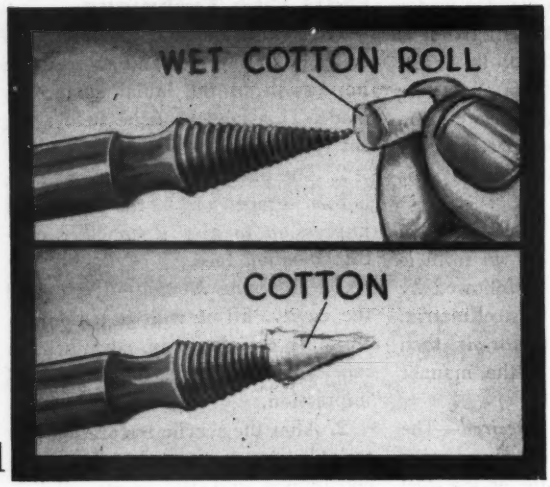
Comment

1. It is important to remember that the larger the bulk of acrylic used, the longer the matrix should be retained under pressure.

2. With the use of finger pressure the operator is apt to hasten the removal of the matrix because of fatigue.

3. With the methods of matrix retention described herein, a few minutes of time added to the pressure period is of little consequence.

1132 *Main Street.*



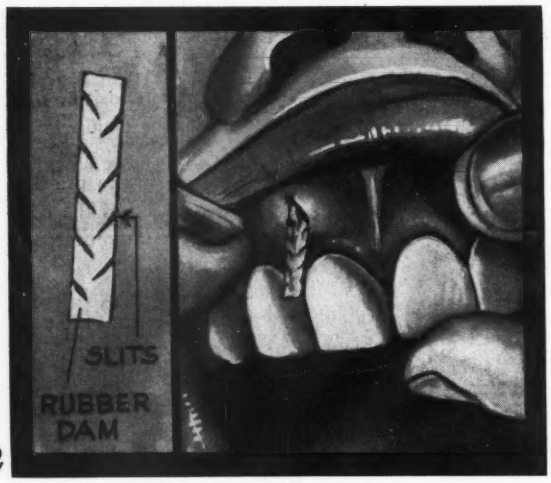
1

Clinical and Laborato

A Convenient Polishing Cone

E. A. Holly, D.D.S., Martins Ferry, Ohio

1. Hold a wet cotton roll endwise against the lathe chuck. Turn on the motor. The cotton roll will wind around the chuck to form a cone.

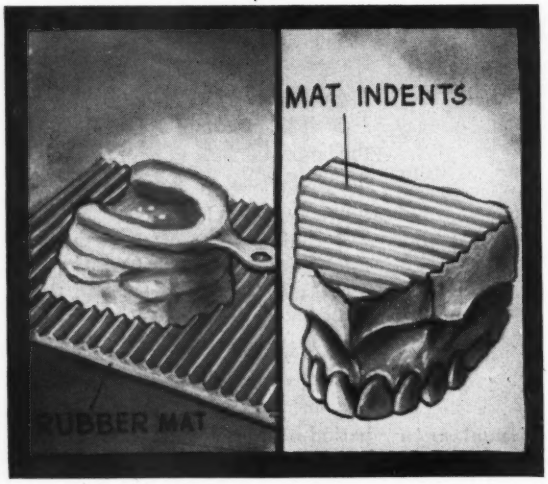


2

A Surgical Drain

George Furst, D.D.S., Jackson Heights, N.Y.

2. A piece of rubber dam, one inch by one-quarter inch, is cut diagonally at various places along its length as shown in the illustration. The rubber is sterilized by immersion in tincture of metaphen or merthiolate. After incision for an acute alveolar abscess, the drain is inserted in the surgical opening. The irregular edges of the drain will prevent its displacement.



3

Retention for Models

C. C. Powell, Liverpool, England

3. Immediately after a model is poured, place it on a corrugated rubber mat. The indentations created by the mat will provide suitable retention for the model on the articulator.

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SUGGESTIONS . . .

To Create Additional Postdam on an Acrylic Denture

Gerald S. Feit, D.D.S., St. Louis

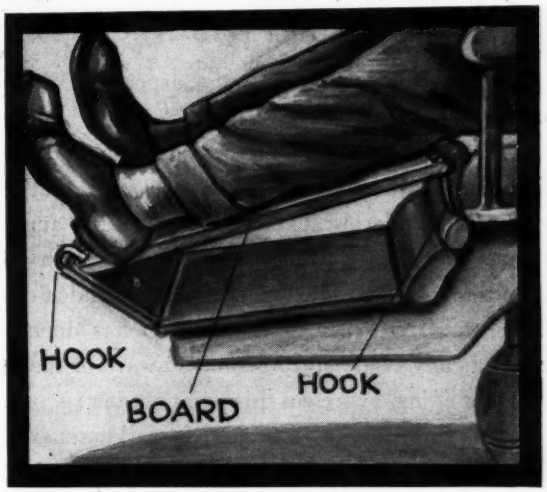
4. To improve the peripheral or postdam seal of an acrylic denture, make a thin mix of quick-drying acrylic. While it is in a plastic state, add the acrylic to the deficient area of the denture. Have the patient make the appropriate functional movements. The acrylic that is added will be in intimate union with the base.

4

An Aid in General Anesthesia

Matthew Lozier, B.S., D.D.S., New York

5. A wooden board, hooked at one end around the rim of the chair footrest and the other around the rim at the chair seat will create a leg rest that will eliminate body arching during general anesthesia.

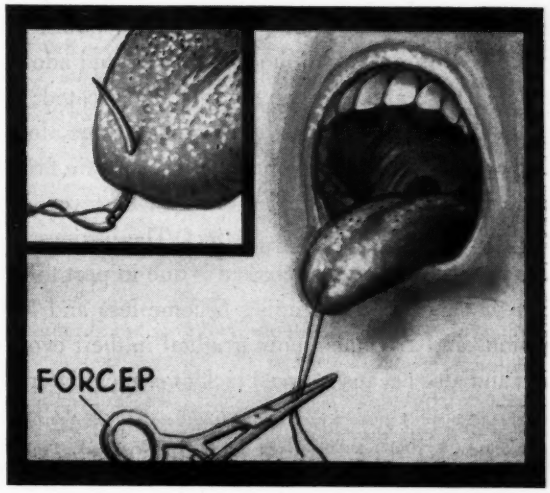


5

Tongue Retraction Under General Anesthesia

James N. Breen, D.D.S., Beaver Falls, Pa.

6. When performing oral operations under general anesthesia, a suture is inserted through the tip of the tongue about one-quarter inch from the end. The free ends of the suture are grasped with a hemostat that hangs about ten inches from the patient's mouth. If at any time the tongue drops back to close the airway, it is a simple maneuver to grasp the hemostat and draw the tongue forward. There is no postoperative pain or tenderness.



6

technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 140 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

The EDITOR'S *Page*

THE OVERWHELMING emphasis on pedodontics has made us partly blind to the urgent dental problems of the aged. In the present population of the United States it is estimated that there are 11,000,000 persons past age 65. In twenty-five years it is believed that this population will increase to 20,000,000 persons. This means that if the dentist population in 1975 is 80,000 practicing dentists each dentist will have a potential of 250 persons past 65 years of age in his practice.

It may be well to agree on terms of reference in considering the problems of the aged:

Gerontology involves all the divisions of the biologic, physical, and social sciences.

Geriatrics includes all the aspects of medical care for the aged.

Gerodontics includes all the aspects of dental care.

What do we know of the biology of aging? Unfortunately, we know but little. We do know that the rate of aging varies among age groups and among the various tissues. Aging begins at conception and 99 per cent of the growth potential is expended during intrauterine life. Stieglitz,[1] who has done as much as any clinician to make us aware of the biology of aging, expresses this point of view:

"The trajectory of human life follows a well defined pattern. Grossly divided into three periods, evolution, maturity, and involution, by Warthin,[2] there are several obvious subdivisions of these phases. Intrauterine life is divided into embryonic and fetal stages. Postnatal evolution recognizes the periods of infancy, childhood, puberty, and adolescence. These are none too sharply demarcated; no exact measure is possible by chronologic age alone. The normal rate of development varies within fairly wide limits. From maturity onward, however, the subdivisions are even less distinct. The haziness of this part of the curve of change is due in part to the fact that the effects of aging become less and less obvious and are much more gradual in their evolution and also because of past lack of clinical interest and study of the age factor in health and disease in adults. The manifestations of aging are conspicuous and dramatic in infancy and youth. Aging change, and aging *per se*, proceed at ever diminishing rates, though the deceleration is not constant.

"The various specialized cells of the complex mammalian organism do not all age at the same rate. Cells which divide frequently, such as those of the basal stratum of the epidermis, are very short lived; their individual span of life is from one mitosis to the next. Others, as for example those of the central nervous system, live as individual cells as long as the organism survives. Between these two extremes are many variations, not only in the specific cell types or tissues, but in functional units, organs, or systems . . . The elderly are not just 'old people'; they are structurally, functionally, and mentally *different* men and women than they were in the days of their youth and early maturity."

Before any consideration of the specific aspects of *gerodontics* we should have an overall view of the characteristics of the aging tissue. Carlson[3] characterizes progressive age change in these categories:

1. Gradual tissue dessication.
2. Gradual retardation of cell division, capacity of cell growth, and tissue repair including reduced capacity to produce immune bodies.
3. Gradual retardation in the rate of tissue oxidation. (Lowering of the basal metabolic rate).
4. Cellular atrophy, degeneration, increased cell pigmentation, and fatty infiltration.
5. Gradual decrease in tissue elasticity and degenerative changes in the elastic connective tissue.
6. Decreased speed, strength, and endurance of skeletal neuromuscular reactions.
7. Decreased strength of skeletal muscle.
8. Progressive degeneration and atrophy of the nervous system.

All these changes should have meaning to dentists who are treating hard and soft tissues that are connected with the stream of life and the general biologic process.

[1]Stieglitz, Edward J.: Geriatric Medicine, the Care of the Aging and the Aged, ed. 2, Philadelphia, W. B. Saunders Company, 1949, p. 6.
[2]Warthin, A. S.: Old Age: the Major Involution, New York, Paul B. Hoeber, Inc., 1929.

[3]Carlson, Anton J.: Physiologic Changes of Normal Aging, in Stieglitz, Edward J.: Geriatric Medicine, the Care of the Aging and the Aged, ed 2, Philadelphia, W. B. Saunders Company, 1949, p. 49.

MEDICINE and the Biologic Sciences

Hypotension

Hypotension is not as well defined as is hypertension. The boundary for the lower level of normal systolic blood pressure has been gradually decreased from 120 to 110 millimeters. Today 110 millimeters is generally accepted. With this as a boundary it is estimated that about 50 per cent of women are found in this group and about one seventh of the men are found here.

The actual fundamental factors concerned with the reduction in blood pressure are: (1) decrease in circulating blood volume, (2) decrease in peripheral resistance, (3) decrease in cardiac output, (4) increase in size of the vascular bed, or (5) decrease in the viscosity of the blood. Each is important but there is considerable interdependency among them.

The specific initiating factors are numerous. It is understood that these are active in producing a condition which can be considered a true hypotension. There is some evidence that climate has a little influence. This probably is related with the way of life, diet, and physical and emotional customs.

Temperature and humidity associated with seasonal variations have little influence on blood pressure. High temperatures may result in circulatory failure or shock.

Other factors having some influence are heredity, exercise, fatigue, and sleep, fever, inflammations, and nutrition. Hypertension is affected by diet to some extent, therefore, hypotension likewise must be affected. This has been noted in the Europeans affected by the war. The increasing incidence of tuberculosis and other diseases has played a role in the decline of the average levels of blood pressure.

General health is not unfavorably affected by hypotension, in fact, life expectancy has been found greater in the presence of low blood pressure. Hypotension seems to preserve rather than injure the physiologic system. After the age of 50, things being otherwise equal, hypotension may be interpreted as a sign of an efficient and healthy cardiovascular renal system.

Although obesity may be accompanied by low blood pressure, the hypotensive persons fall into the linearly built, underweight class about twice as often as in the laterally built, overweight group. The body temperature of the essential hypotensive group is lower than that of other persons, their pulse is variable, and they frequently have narrow nostrils and nasal obstruction, decreased thoracic capacity, and signs of asthma.

Acute fall in blood pressure occurs in (1) shock, medical or surgical, (2) food poisoning, (3) fright, during or after administration of anesthetics, vasodilating drugs or poisons, (4) anaphylactic reactions, and (5) pulmonary embolism.

Subacute hypotension is associated chiefly with infectious diseases. Typhoid, scarlet fever, typhus, influenza, malaria, trichinosis, pneumonia, and cholera produce the condition as a result of dehydration, fever, electrolytic imbalance, lowering of bodily tonus, and some degree of myocardial weakness.

Chronic hypotension, besides being a part of the hypotensive, hyporeactive state, is associated with the chronic endocrinopathies, anemia, and chronic infectious diseases. Chronic focal infection and toxemias are frequently accompanied by hypotension.

The fundamental concept is that hypotension is not a disease but rather is sometimes the manifestation of an altered physiologic state and sometimes the ideal level of blood pressure. This state suggests a freedom from cardiorenal disease and a probability of increased longevity.

Sound management calls for thorough examination and correction of the cause or causes. Often reassurance and psychotherapy are the most important remedial procedures for alleviation of symptoms. It is often a matter of judgment as to whether the condition is or is not serious.

Threefoot, Sam A.: Hypotension, Am. J. M. Sc. **218**:86-100 (July) 1949.

Migraine

Migraine is a distinct and specific type of headache. It has definite characteristics and is not to be confused with vasodilator, tension, or nervous headache.

A migraine headache consists of three distinct phases: (1) the preheadache, (2) the pulsating unilateral headache, and (3) the bilateral aching pain.

The First Stage—The preheadache or aura is a phenomenon of constriction of the internal carotid arteries. It manifests itself as a disturbance of one of the cranial nerves, usually the first, second, fifth, eighth, tenth, or twelfth. It may involve abnormalities of smell, vision, hearing, balance, taste, or cutaneous paresthesia. There is no element of pain in this stage. There may be a complaint of half vision, double vision, scintillating scotomas in various patterns, tinnitus, vertigo, peculiarities of smell or taste, and numbness or itching of the skin or paroxysmal tachycardia. Increased activity of the bladder or bowel is

frequently present. Each patient has his own aura pattern. The duration is measured in minutes. The aura is present in almost every true migraine.

The Second Stage—The classical headache begins as a localized, throbbing, unilateral headache. This later becomes more generalized on that side of the head. Nausea and vomiting occur during this stage. Vasodilatation of the external carotid branches occurs. Therefore, vasoconstrictors are of value. The scalp is not yet tender. The duration is measured in hours.

The Third Stage—As this stage is approached the headache becomes bilateral. It is quite generalized and described as a steady grinding pain. The scalp over the affected area is tender and tense. The pain is now due to edema and stretching of the scalp muscles with pressure on pain-carrying areas. Vasoconstrictors are of no value since the vessel walls themselves are now also water-logged. This stage lasts hours, days, or in the migraine state, weeks.

Migraine usually begins early in adulthood but may be initiated as late as in the forties. The attacks show a progressive cycle with gradual increase in frequency, duration, and severity. A sufferer from a monthly eight-hour headache at twenty may have a two or three-day headache twice a week at forty. These attacks merge into a migraine state where pain, nausea, vomiting, and despair are continuous.

In the typical patient with migraine there is complete freedom from headache between attacks. There is usually freedom during the last six months of pregnancy. A feeling of well-being or euphoria is experienced the day before the headache begins.

There seems to be a strong familial tendency and inheritance from a father appears to predispose to especially severe migraine. The ingestion of chocolate, large amounts of rare red meat, or an effervescent wine may precipitate an attack. Migraine in the second stage may be present on awakening, the aura having occurred during sleep.

Fatigue or nervous strain may tend to increase the frequency or intolerability of attacks. Rest and exercise may make them less frequent and more bearable. However, fatigue and worry do not cause migraine headaches as the headaches often occur on Sunday or while on vacation during a period of "let-down."

General treatment includes the following: 1. Dietary restrictions, rest, exercise and reassurance. 2. Routine taking of ascorbic acid (because of its mild vasoconstrictor effect) in doses of 100 milligrams three times daily. 3. Patients may also be instructed regarding the possible aborting of attacks by salicylates or the supervised use of one of the ergotamine group of drugs. These must be taken, preferably in stage one and certainly early in stage two, if they are to be effective.

Specific treatment consists of the intravenous injection of histamine. This involves a series of five to ten treatments each lasting from four to six hours. Fifteen per cent of patients secure complete freedom from the attacks. About 75 per cent secure relief in varying degrees. This is a safe procedure now when it is carried out in the hospital with the patient under careful observation. It offers real hope for the relief of severe migraine.

Butler, Stuyvesant, and Hall, F. R.: The Diagnosis and Treatment of Headache, M. Clin. North America **33**:1439-1454 (*September*) 1949.

Smoking vs. Peptic Ulcer

Some interesting observations on the relationship of smoking to peptic ulcer were recently published. The data concerned two problems: (1) the influence of smoking tobacco on the management of the peptic ulcer patient as measured by the effectiveness of antacid therapy and the incidence of acute exacerbations and (2) the influence of smoking processed or partially denicotinized tobacco on the course of the peptic ulcer.

Patients who continued to smoke had a poor response to treatment. The effectiveness of antacid therapy was no greater than 47 per cent. The inadequacy of treatment was reflected in the high incidence (53 per cent) of acute exacerbations.

Those persons who discontinued smoking or never smoked had an excellent response to antacid therapy. The incidence of acute exacerbations decreased to 11.5 and 17.5 per cent, respectively.

In one group of patients refractory to ambulatory management with antacid therapy when smoking regular tobacco, the use of a processed or partly denicotinized cigaret resulted in improvement of over 75 per cent of the cases. The incidence of acute exacerbations decreased from 53.5 to 20 per cent. Reinstitution of smoking tobacco of full nicotine content in most patients who have shown improvement with the partly denicotinized tobacco will result in decreased effectiveness of antacid therapy and an increase in the incidence on exacerbations to a level corresponding to the control level.

Batterman, R. C. and Steigmann F.: Influence of Smoking Upon Management of Peptic Ulcer Patient, Gastroenterology **12**:575-586 (*April*) 1949.

Isopropyl Alcohol

This agent has a variety of uses in the dentist's office. Isopropyl alcohol is also gradually replacing ethyl alcohol in a number of hospital uses. As a massage compound isopropyl alcohol serves well, as it does for the preparation of many pharmaceuticals.

It can be used in several ways: 1. As a preoperative antiseptic for the surgeon's hands and for application to the field of surgery. 2. It can be applied to the point of hypodermic injection or used to cleanse wounds. 3. For sterilization of instruments and storage of sutures isopropyl alcohol may be used with safety.

In the laboratory it can replace ethyl alcohol in many preparations. This increasing field of usefulness is advantageous because isopropyl alcohol is not subject to burdensome fed-

eral regulations, restrictions, and taxation. It is recognized by the American Medical Association (New and Nonofficial Remedies) and is offical in the National Formulary.

Since it is nonpotable, precautions must be taken to prevent internal use. The toxicity of isopropyl alcohol is almost twice that of ethyl alcohol. When taken internally it is rapidly absorbed from the gastrointestinal tract, partially transformed into acetone, and is eliminated by way of the kidneys. The ingestion of small amounts will not produce deleterious effects.

Isopropyl alcohol has a better germicidal value than ethyl alcohol. The maximum value occurs at a lower concentration. A 50 per cent solution is equivalent to a 70 per cent solution of ethyl alcohol. This means a superior germicide at a lower cost. With a lower surface tension and a greater fat-solvent action it provides a useful disinfectant for the skin. Insulin is not precipitated as with ethyl alcohol.

Minor Notes: J.A.M.A. **133**:734 (*March* 8) 1947.

Health Problems in Industrialized Agriculture

The extent to which agriculture has been industrialized is seldom realized. An industrial revolution has taken place on the farm because of concentration of land ownership, the introduction of mechanization, specialization of crops and readily available transportation. In 1940, only slightly more than 4 per cent of our six million farms accounted for almost half the nation's total farm acreage.

Mechanization is probably the most widely recognized phase of agricultural industrialization. However, there are other phases equally as important. With many types of specialized crops, there are sharp peaks of labor requirements. Much of labor is furnished by the employment of local workers for pay and by the unpaid work of members of the farm family. The remainder requires that several thousand workers leave their homes for periods varying from several weeks to seven or eight months to work in areas that have seasonal labor needs so high that sufficient workers cannot be recruited locally.

There are 56 well-defined major areas of this nature in the United States. These areas are located in 44 of the 48 states. Studies by the Public Health Service and the Department of Agriculture reveal the tremendous burden of disease and disability caused by the migrants following the crops. To a great extent, the cause of this heavy toll of ill health is to be found in the poverty of these workers, the unsanitary rural slums where most migrants make their homes and their difficult working conditions.

Residence requirements and local settlement laws make it frequently impossible for migrants to receive even such public health and welfare medical services as are available to local residents. Also the farm workers are not covered by worker's compensation as a general rule.

Accidents account for a large number of deaths and permanent injuries among farm workers. Occupational diseases are many and varied. Also there are many conditions of toxic exposure peculiar to agriculture. Sprays, fertilizers, and pesticides are all potential hazards.

There are many specific irritants responsible for occupational dermatoses. (There is a high incidence of cancer of the skin in the rural south. This is important and perhaps should be more thoroughly investigated as being related to the occupational dematoses peculiar to agriculture.)

Recurring and frequent upper respiratory infections are found to be associated with the overcrowded, poorly heated, and poorly ventilated houses of many farm workers. Digestive disturbances, for the most part diarrhea, are the result of inadequate preparation and other poor food handling practices.

Not only is there a medical aspect to this problem but also there is a dental phase. These persons receive inadequate dental care. And too, they are frequently subjected to many living and working conditions conducive to poor dental health.

Axelrod, S. J.: Health Problems in Industrialized Agriculture, Am. J. Pub. Health **39**:1172-1175 (September) 1949.

Considerations in Geriatric Anesthesia

Many new problems have been created by the spectacular increase in the life span of persons past forty years. The problems are concerned with social and economic fields as well as with medicine, dentistry, and surgery.

In anesthesia for older people the anesthesiologist is concerned with the senescent changes noted in the cardiovascular, respiratory, and excretory systems. It is these changes which are mainly responsible for the diminished ability of the aged to maintain hemostasis in the presence of strain.

The efficacy of the respiratory system is adversely affected by (1) tissue fibrosis and (2) loss of elastic tissue. Thus emphysema, usually of the atrophic type, is common among these patients. This condition, combined with an increased susceptibility to depressant drugs, results in an increased tendency to hypostasis, atelectasis, and many of the other respiratory derangements complicating surgical intervention.

In the bronchi, loss of elastic tissue and mucosal atrophy results in a retardation of bronchial functions. Consequently, the elimination of secretions and foreign material from the respiratory tract is sluggish and inefficient. Late overall effects of pulmonary aging are the following: 1. A state of chronic hypoxia due to diminished ventilation. 2. A reduction in the number of functioning alveoli. 3. Decreased permeability of the alveolar walls.

Some of the consequences of cardiovascular aging affecting anesthesia are: (1) Increased incidence of cardiac irregularities and vascular spasms, (2) diminution of arterial elasticity and of blood supply to

various organs, most significant in effect on function of heart, brain, kidney, and liver, (3) hypertension, (4) decreased response or abnormal response to both vagal and sympathetic stimulation, and (5) increased tendency to thrombosis and embolism associated with diminished plasma volume.

The absorption of drugs, whether given by inhalation, rectum, mouth, or subcutaneously, is generally slower than in younger persons. Also, drugs which are eliminated via respiratory tract or kidneys are lost more slowly. As a consequence of the reduced metabolic rate the destruction of drugs by oxidation or conjugation also proceeds more slowly. These factors naturally increase the possibility of toxic or of excessive cumulative action of drugs. Therefore, special caution must be exercised in the use of depressant drugs.

There are four basic reasons for premedication: (1) To decrease metabolic rate, (2) to allay anxiety, (3) to lessen secretion, and (4) to diminish reflex activity. Since age has already lowered the metabolic rate, psychic sedation remains as one of the major preanesthetic objectives.

The need for individual sympathetic consideration of every patient is so great that it is impossible to generalize about the dosage of drugs employed except to state that routine premedication, especially routine morphine dosage, must be shunned.

Barbiturates in proper dose and time will result not only in an optimistic well-rested patient but frequently will provide an excellent indication of the patient's susceptibility of sedative drugs. Barbiturates are also indicated when regional or local anesthetic procedures are contemplated. A small dose of one of the shorter acting barbiturates given two hours before the induction of anesthesia will enhance the sedative action of the opiate and exert a protective action against the toxic effects of the local anesthetic agent. One must always keep in mind that barbiturates may cause excitement and confusion.

Goffen, Bernard S., and Wood, Paul M.: Geriatric Anesthesia, Am. J. Surg. **78**: 475-479 (*October*) 1949.

Treatment of Alcoholism

The problem of alcoholism is growing in magnitude. Prevention as well as the treatment should have the active support of all professional men. Today alcoholism is regarded as a symptom of a social and psychologic illness.

Prevention consists of two phases: (A) attacking the problem in its early stages, and (B) education, church activities, and community programs.

There is no one method nor is there a specific treatment for alcoholism. The therapist must be understanding, tolerant, and flexible. Each patient must be regarded as a different problem. The personality of the alcoholic must be examined, studied, and treated. All of the factors must be examined, especially the physical condition, intellect, quality of emotional maturity, the desire to develop control, and all of the social and environmental situations.

The medical treatment is essentially supportive and protective. The first point in treatment is the protection of the patient against self harm or suicide, likely to result from the confusion and disorientation. Special nursing care is often needed to give the individual some sense of constant protection which may offset the fears. Relaxation and elimination may be promoted by hydrotherapy.

There should be no mechanical restraints, since these will only increase the patient's fears and alarm. In cases of overactivity, chemical sedation may be necessary. This is to be avoided wherever possible for the brain already is in a toxic state and the delirium is increased by drugs.

Paraldehyde in doses of 15 cubic centimeters by mouth and up to 20 cubic centimeters by rectum is effective. This will not increase the toxic reaction.

The imediate need is for the elimination of alcohol. The delirium may appear worse after suddenly stopping alcohol administration but on the whole the process is shorter. The best procedure is to stop all alcohol immediately.

The patient with alcoholic delirium needs hospital care and commitment should be arranged if he resists.

Among the first steps are gastric lavage and bowel elimination. A bland diet including vitamins and fluids should be instituted. A liquid diet high in calories and in vitamin B is given by tube if necessary. Intravenous injection of hypertonic glucose solution may be necessary. Insulin given in subconvulsive dosage combined with carbohydrates several times daily is also a valuable aid.

For the patient with chronic alcoholic hallucinations, immediate hospital commitment is indicated.

Predictions of good prognosis include occupational success, intelligence, emotional stability, and interest in sobriety clubs such as the Alcoholics Anonymous group.

Jaenike, Richard: Treatment of Alcoholism, Postgrad. Med. **6**:320 (*October*) 1949.

Acetylsalicylic Acid Intoxication

The use of acetylsalicylic acid, sodium salicylate, and other salicylate compounds is widespread throughout the world. The acetylsalicylic acid tablet per se is rarely thought of as a toxic agent. However, it may be just that. There are a sufficient number of cases on record to warrant a word of caution. This is especially true in prescribing the drug for infants and young children.

For adequate antipyresis or analgesia, 0.09 gram of acetylsalicylic acid per kilogram of body weight need not and should not be exceeded as the daily dose for infants and young children. Unusual symptoms and signs referable to the central nervous and renal systems, the gastrointestinal tract, and the liver should make one suspect the possibility of intoxication by acetylsalicylic acid or other salicylates. The early recognition of these symptoms and signs not only may prevent serious complications but may even be life saving.

Most of the symptoms and signs of

acetylsalicylic acid poisoning are the result of (1) damage to the brain, kidney, and liver, and (2) concomitant changes in the electrolyte balance. The alterations in the electrolyte balance caused by the salicyl radical produce many of the manifestations of poisoning from this substance.

Initially the salicyl radical stimulates the respiratory center so that an uncompensated alkalosis due to hyperventilation is produced. Compensation is rapidly brought about by the excretion of excess bicarbonate in the urine. The process goes on to the final stage of decompensated acidosis with depletion of the alkali reserve, decrease in blood pH, and failure of the respiratory center in its attempt to achieve compensation.

In those cases seen early, cessation of use of the drug and gastric lavage with tap water are necessary. Lavage, however, is useless if hypernea has supervened. Sodium bicarbonate should not be used for gastric lavage since it may increase the absorption of acetylsalicylic acid. In serious cases, intravenous injections of dextrose solutions are necessary to maintain fluid balance and provide complete treatment.

Lipman, Bernard L.; Krasnoff, Sidney O.; and Schliss, Robert A.: Acute Acetylsalicylic Acid Intoxication, Am. J. Dis. Child. **78**:477-483 (*October*) 1949.

Oral Malignancy

Approximately 7,500 Americans die annually from cancer of the mouth, lip, tongue, and jaw. As many as 6,000 potential oral cancer victims could be saved by (1) reasonable suspicion, (2) early diagnosis, and (3) effective treatment.

The dentist must accept the first line of responsibility for suspicion and diagnosis as he usually sees his patients more frequently than the physician. Also, he is trained in the diagnosis of oral lesions.

Cancer may arise on the labial or buccal mucosa, palate, tongue, gingiva, or within the jawbones or the salivary glands. Almost all malignant tumors of the oral mucosa are epidermoid carcinomas (squamous cell.) Other malignant tumors of the oral cavity are (1) adenocarcinomas, (2) mixed tumors, (3) malignant ameloblastomas, and (4) the various types of sarcomas. No age group is free from the threat of cancer, although the incidence in older persons is higher than in children.

So-called precancerous lesions include (1) chronic fissures and ulcers, (2) benign tumors, (3) keratosis (horny growths), and (4) leukoplakia. In most cases these do not develop into cancer but their presence indicates irritation. It is essential that the cause of the irritation be discovered and removed.

Leukoplakia has long been recognized as a possible precursor of cancer. It is usually a sign of irritation. The persistence of this irritation may continue until it initiates cancer.

There seem to be a number of predisposing causes such as (1) heredity, (2) various deficiencies, (3) use of tobacco, (4) syphilis, and (5) the three types of irritation: (A) traumatic, (B) thermal, and (C) chemical. Probably the most important and active etiologic factors lie in the dental apparatus and supporting structures.

Tumors often arise in edentulous mouths because of loose fitting or improperly balanced dentures, which may irritate the underlying mucosa. This irritation may aid in causing (1) epulis, (2) fissuratum, (3) papillary carcinoma; or through ulceration, permit invasion of the jawbone and resultant carcinogenic effect.

Chronic periodontal disease may supply the irritating tumor-forming factor. Deep within the pockets around the teeth or within crypts under third molar flaps, there may be sufficient stimuli from bacterial fermentation and putrefaction to promote tumorous changes. Such changes may not be discernible until the tumor is too far advanced to treat etiologic factors or even trace them.

Although cancer of the lip develops at a site easily observable by the patient, physician, or dentist, almost one out of very 100 tumor deaths is due to carcinoma of the lip. The lesion located in the red area of the lip (between the cutaneous border and the line of closure of the lips) usually grows slowly. It can be cured in 95 per cent of cases in which early diagnosis is made. Cancer of the lip is relatively rare in women and in both sexes under 25 years of age. About 95 per cent of all lip cancers occur on the lower lip. Early lip cancer usually appears as (1) grayish-white, elevated, warty (verrucous) growths, (2) eroded lesions with hardened borders, or (3) moist scaling areas of inflammation.

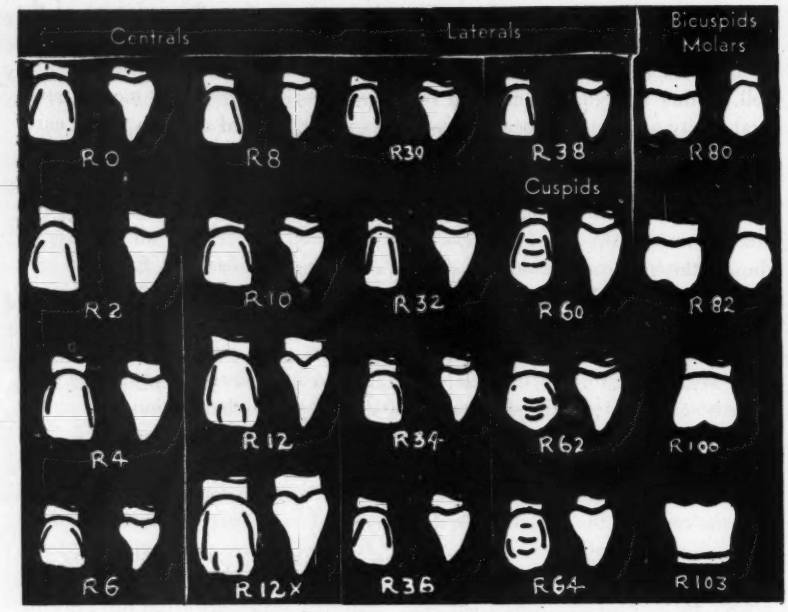
Any persistent lesion of the oral cavity which cannot be readily diagnosed as nonmalignant should be examined by biopsy. When this is done properly, there is no danger of spreading the cancer. Living cells should be removed surgically from the growing edges of the lesion; this piece of tissue should be placed immediately in 10 per cent formalin or in any other suitable fixative and forwarded to the pathologist for microscopic examination.

A complete dental service should include diligent visual, manual, radiographic, and laboratory methods. The physician, too, must be aware of the need for regular oral examination by the dentist.

Periodontal structures that recently have been subjected to irradiation are not amenable to operative precedures and dental treatment should be completed before radiation therapy is started. After heavy, deep irradiation the teeth often disintegrate in one or two years. The exact cause of this phenomena is not known but it does not appear to be due to the direct effect on the teeth for lead shields over the teeth will not protect against it. It is suggested that all teeth be removed before deep and heavy radiation therapy of the face or neck.

Every suspicious swelling, ulcer, papillomatous growth, radiolucency, or roughness in the oral region calls for immediate and positive diagnosis and adequate treatment.

Robinson, Hamilton B. G.: Medical and Dental Aspects of Oral Malignancy, Postgrad. Med. **6**:355-364 (*November*) 1949.



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Contra-Angles

The Sage Writes a Book

Herbert Ely Williams, dentist and philosopher, with seventy-seven good years of living to his credit, has written a book, "Humanizing Our Great Profession." Uncle Herbie, or The Sage of Red Bank, is lovingly and widely known for his talks to dental groups throughout the country.

The book by The Sage defies a review. It is not a technical or a scientific book. It is not an autobiography. It covers many topics with flashes of homespun humor and penetrating comment. There are no chapters and a professional literary critic might say there was little continuity. But who cares what a stuffy critic might say?

Uncle Herbie has a fine disregard for the grammarians and the rules of style. In that he is following the modern literary trend that probably had its beginning with James Joyce who wrote in the stream of consciousness manner, putting down on paper the scattered thoughts that entered his mind in the same fashion as thoughts follow as they flit about in everybody's head.

A book that is carefully organized, that follows a strict pattern of sequence, that builds up to a climax and flows downward to a *denouement* will satisfy the literary purists and the people who "teach" writing. Such a book may be as stiff as a poker and as lifeless as a dead herring and entirely without meaning to the people who read it. A pretty book, a mechanically perfect book may not be a *good* book.

The Sage has published and is distributing the book himself. It sells for $4 which will include an autograph in the flowing script of the author—Herbert Ely Williams, D.D.S., Red Bank, New Jersey.

Another Dentist with More than Fifty Years of Practice

In Portage, Pennsylvania is another dentist with a long and productive career, John G. Logan. With commendable selection, Almy Harding, the alert editor of the *Journal of the Southern California State Dental Association* has presented a sensible article on the lower denture written by Doctor Logan. Here it is in part:

"Now this is just what has happened in the construction of the lower denture. The dentist incorporates everything of advantage from impression to articulation and balanced occlusion but overlooks the most important factor in retention and function—the human reflex. He forgot to design his denture so that these reflexes which the patient will acquire in the tongue and cheeks have an advantageous seat to function. He builds the tissue side of the denture with no thought of this. The lingual side has perpendicular walls and I have often seen them convex; instead of extremely concave so the floor of the mouth and tongue can lie in them and nestle there. The same is true on the buccal side which is concaved and flanged so the muscles of the cheek will also have a nest. When the reflexes are acquired, the synchronized action of the muscles of the tongue and cheek, working in unison, will stabilize the denture. Bear in mind that dentures cannot be constructed to conform to the laws of mechanics. The form of the denture seat and esthetics precludes that. Hence, ninety-eight per cent of dentures would not function as a masticating device if it were not for the muscular reflexes that control them.

"The physiological definition of muscular reflex is stimuli or excitation of muscle without necessarily the intervention of consciousness. And one of the erroneous things a dentist will do is to serve the patient with dentures and not acquaint him with the fact that he must acquire these reflexes, and if the patient is not persistent in his effort to wear the dentures, regardless, until these reflexes are acquired, the dentures will not

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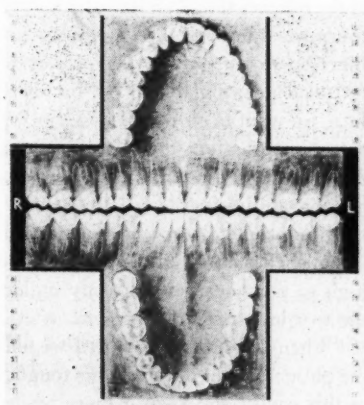

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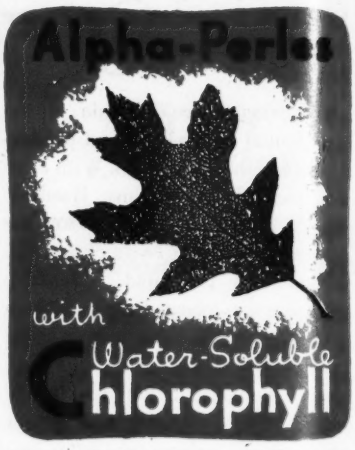
function and perhaps wind up on the mantle or in the old clock.

"It is important to acquaint the patient with what you mean by reflexes of the muscles—the child must acquire them as he first stands and attempts to walk—at first he falls, then, by persistent effort he can take a step and finally walk. Reflexes must be formed in every human endeavor. The acrobat, the ball player, the golfer, the skater, the piano player, the stenographer, and the automobile driver, all must acquire these muscular reflexes.

"Of course, some patients acquire them rapidly; others are not so adept in their acquisition, and those who are not persistent and tenacious enough will not acquire them at all. This latter type of patient is prone to put the blame on the dentures and it is sometimes advisable to draw a parallel: If you purchased a pair of skates and could not skate with the first few trials you would not blame the skates or the merchant. If you bought a piano and could not play it in a few trials you would not blame the piano or the dealer. To buy a bathing suit gives no assurance you can swim—you must practice as with the piano or skates. So it is like the skater with his first trials and falls, you may hurt yourself. You will injure the ridge until the reflexes form in the muscles and stabilize the denture.

"It would make this article too voluminous to go into the impression, jaw relation, vertical dimension and denture design, but I do want to mention a little stunt that we incorporate in the lower denture to make the patient more quickly acquire one of the reflexes that stabilizes the lower. Since we know that the tongue has no function or purpose to perform in a retruded position but to lift the denture, we want to stop that first. So we cut a depression three millimeters deep, three or four millimeters wide, and six millimeters long with its long axis pointing toward the cuspids. It is polished smooth and oval. This is high to the center and directly under the two lower central incisors.

"When the denture is seated we tell the patient to put the tip of his tongue in this cavity and keep it there while



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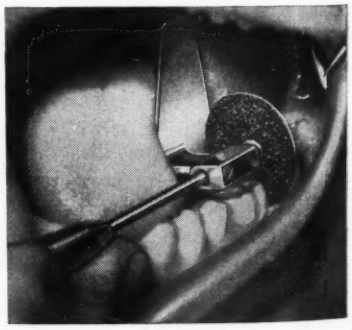

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we take a sharp instrument and insert it between the centrals and lift. Of course, we can scarcely dislodge the denture. Then we let him retrude the tongue and show him how easy it is to dislodge the denture. Next we tell the patient to practice keeping his tongue in that cavity or in close proximity and he will have no trouble keeping the denture in position. After that the patient has no alibi. If the denture is properly designed the sides of the tongue and floor of the mouth will nestle in the concavity of the lingual part of the denture and the muscles of the cheek will fold over the buccal flange, securing the denture to its seat.

"Remember, that patients seldom know what position their tongue is in and must have a landmark they can feel—hence, the distinct depression or cavity in the lingual part of the denture below the central incisors.

"Fifty years of dental practice and thirty-five years of intense study and experiment with the various techniques in denture prosthesis, coupled with twenty-five years of the actual wearing of dentures, has forced this conclusion: You may incorporate everything in a denture, including mucostatic base and occlusal balance, but if you neglect to design the tissue sides of the denture to accomodate the muscles of the tongue and cheeks, so as to give the utmost advantage when in muscular reflex, you have lost the most important lever in stabilization."

Another Old Timer

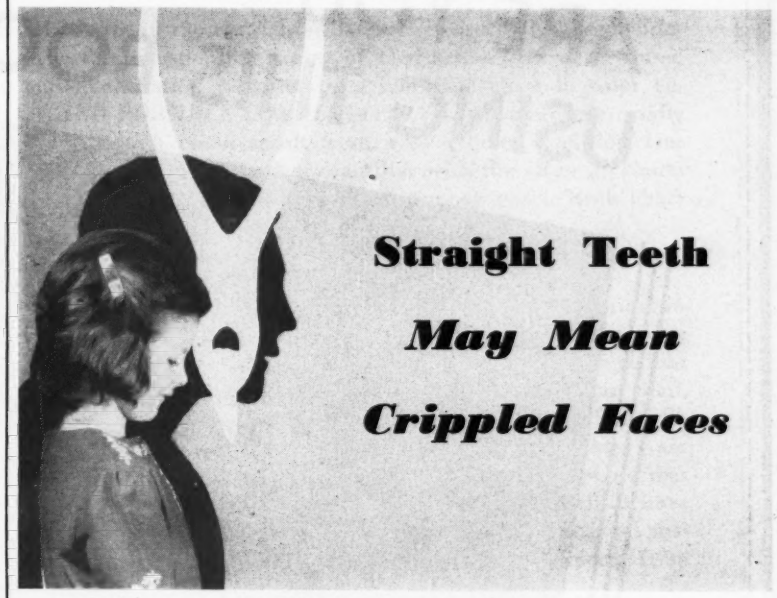
I have recently reread Percy Howe's letters that were written twenty-two years ago. Many dentists in practice today are not familiar with them. If not, they are missing the important writings of a scientist who has been conducting research on dental disease for sixty years.

Here is a short quote from Percy Howe that shows the depth of his understanding and his approach to dental disease:

"There are four descriptive terms commonly applied to the condition marked by a high degree of susceptibility to physical ills. Perhaps none of

(*Continued on page* 140)

In your ORAL HYGIENE this month



Sounds like an anomaly, doesn't it? Yet Doctor H. C. Pollock, editor of the American Journal of Orthodontics, is convinced that the early extraction of permanent teeth to permit migration may frequently result in a reduction of growth of the maxillary area. He says: "In a word, the end result, straight teeth, means nothing if facial development and expression are arrested or distorted in the process. Such treatment is a speculative procedure at best." You will not want to miss this interesting and important article.

★ ★ ★

The new Department of Oral Surgery of St. Louis University has been dedicated to the memory of an outstanding alumnus of the school, Doctor George B. Winter. His work in dental surgery, his contribution to dental knowledge, and his very numerous professional activities, earned for him the respect and regard of the dental profession, and it is fitting that this posthumous honor be added to those he received during his lifetime.

★ ★ ★

"Too full an appointment book may not be the best way to lead a full life," cautions R. Kenneth Thomson, M.D., in discussing "The Dentist and His Heart." Mental and physical strain and tension, fear and anxiety are to be avoided whenever possible. He writes: "I recommend to you any change in office hours, routine, or conduct which would lessen the strains of life, or which would make you less unpleasantly responsive to them."

★ ★ ★

"A Fugitive from a Schizophrenic"—If you think some of your patients are peculiar, read Doctor Joseph Murray's account of two of his! You won't wonder then, that he believes that some knowledge of psychiatry is necessary as a protection for dentists.

★ ★ ★

Doctor David Tabak has found that it is very hard for the dentist to play the dual role of health-teacher and purveyor of a rich assortment of dental merchandise. Probably all dentists will agree with this premise, though they may not agree with Doctor Tabak's proposed solution of this particular professional problem.

★ ★ ★

Do you give a prophylaxis *before* diagnosis and treatment? Doctor Karl J. Humphreys has found that prophylaxis by the dentist himself, when used to augment examination and roentgenograms, is a valuable aid in gaining a complete knowledge of the case.

★ ★ ★

"The Dentist—Bookkeeper and Tax Expert"—Reading this article may save you time, effort, and money. Arnold J. Koller, C.P.A. explains a simple, efficient method of dental office bookkeeping that can lighten next year's federal income tax burdens—if you begin *now*.

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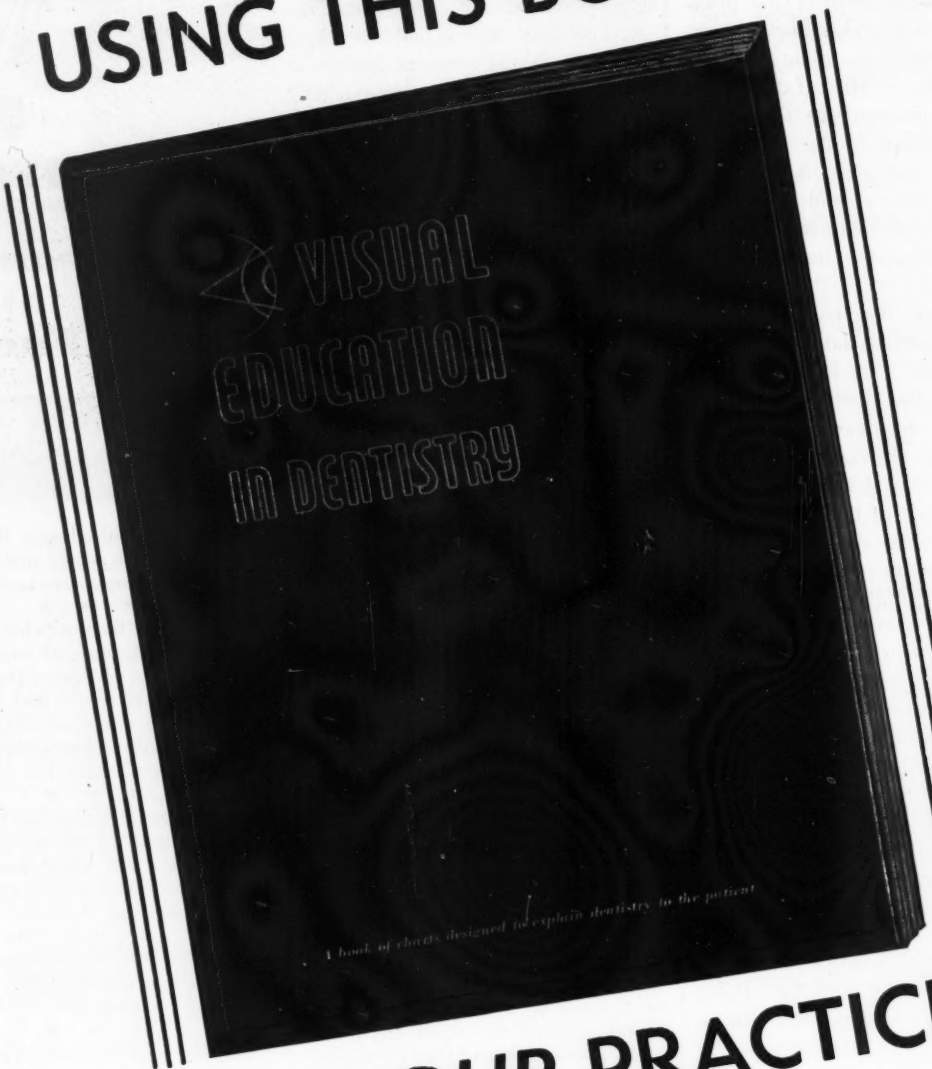

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Thousands of practitioners have already ordered this tenth reprinting since it was announced a few months ago . . . . . .

THE NEW CHART: There are 31 charts in the *tenth* (and latest) reprinting of *Visual Education in Dentistry*. The newest addition to this ever-popular series of charts most frequently used by practitioners everywhere in their patient-education programs is a four-page chart in color entitled *THE DANGERS OF PYORRHEA AND POSSIBLE COMPLICATIONS*. It portrays pictorially possible complications in the blood stream which could result from a pyorrhetic condition (see pages 395-98 in September *Dental Digest*). Many practitioners are familiar with the other 30 charts in the booklet which they have been using regularly in their practices for many years. Each chart tells a specific story with easily understood illustrations and descriptions.

TYPICAL COMMENTS: "I have just seen your latest reprinting of Visual Education in Dentistry and think it is one of the most interesting and valuable sources of dental information for patients. I am planning to have my new office in about two weeks and by all means I should like to have at least two copies at that time. Will you, therefore, send the copies by air mail, charging me for the extra postal expense. Congratulations on the tenth reprinting!"—A. S. L. W. "Will you please send me information regarding patient-education material you have available. I am already using Visual Education in Dentistry with great satisfaction." D. L. R. "I am a subscriber to Dental Digest and have received Visual Education in Dentistry. I would like very much to have a second copy of the booklet. Enclosed is another $1.00. I make great use of this educational material." I. P. Space limitations make further quotations impractical but the above comments from recent letters exemplify the high regard of the dental profession for the booklet.

OVER 90,000 DISTRIBUTED: Several thousand copies of the latest reprinting have already been sold, bringing sales, since the original edition, over 92,000. Many practitioners are ordering two or more copies, realizing that the potential value of these charts cannot be over-estimated. Every practitioner should have at least two copies—one for use at the chair; the other for reception room use. *A better investment at small cost could not be made.*

SAME PRICES: The original edition of *Visual Education in Dentistry* contained 12 charts. Since then it has been enlarged considerably and at present the booklet contains 31 charts—the complete series to date. The prices of the original edition were $1.00 to regular subscribers to Dental Digest and $2.00 to non-subscribers. Those very same prices apply today despite the fact that paper and printing costs alone have increased over 100% since the original edition. We know the value of this material in making the public realize the *value of periodic dental treatment and the danger of neglect* and we feel it is our duty to keep the price of such ethical material within the means of everyone. We refer non-subscribers to Dental Digest to the special subscription combination offer mentioned in coupon. Why not send your order now?

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CLINICAL AND LABORATORY SUGGESTIONS

(*See pages* 126 *and* 127)

Form to be Used by Contributors

To: Clinical and Laboratory Suggestions Editor

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From: _____

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Subject: _____

Explanation of Procedure:

Sketch:

Suggestions submitted cannot be acknowledged or returned.

$10 will be paid on publication for each suggestion that is used.

(*Continued from page* 137)

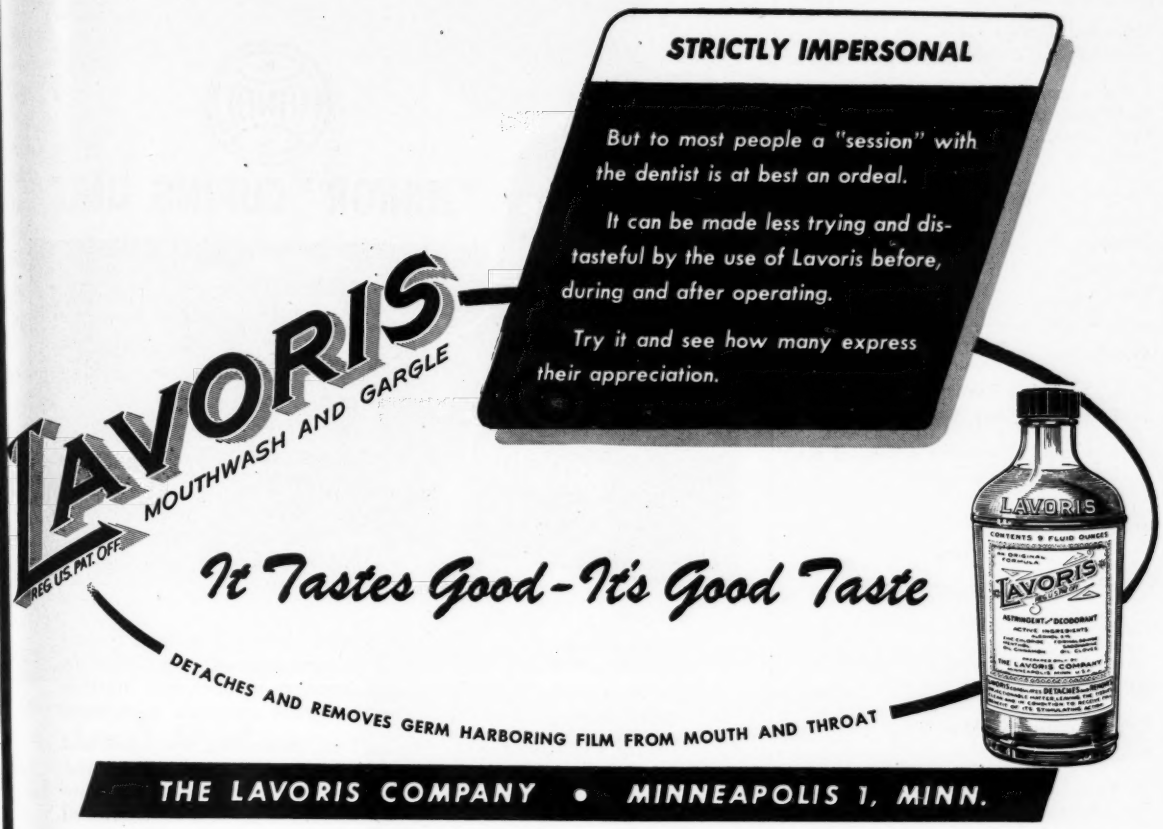
these terms is perfect, but you should know them all. They are (1) *decreased vital resistance,* (2) *increased susceptibility,* (3) *functional or nutritional unbalance,* (4) *a lowered physiological threshold.* I like the last term best because I can picture to myself all the ills that flesh is heir to waiting outside the door, unable to get in while the threshold is high but slipping in singly or in groups as the threshold is lowered.

"What could lower the threshold in such an organism? There may be many agents, acting singly or together, such as cold, fatigue, hunger, diet-deficiencies or excesses, toxins, etc. Observe that none of these is bacterial. The physiological threshold of the perfect organism must be lowered with something besides bacteria before bacteria can grow.

"In some mouths which receive slight dental attention there are broad arches, sound teeth and healthy tissues. One of my first patients was a German who traveled about the country selling clocks. One day he came into the office and, sitting down in the dental chair, he said, 'See if my teeth need fixing.' I examined his mouth carefully. The only thing I could find to do was to remove a line of thin, dark stain on the crowns of the teeth just occlusal to the gum line. The arch was fine and broad, every tooth was in position, and there was not a cavity. He told me that he was sixty-eight years of age, and that it was the first time he had ever sat in a dental chair.

"I thought about this old German a good deal. As I got better acquainted in town and began to repair the extensive ravages that decay was making in the teeth of others who lived in similar conditions, I came to the conclusion that he had some sort of physiological balance throughout his whole system, and that it insured a balance of the saliva which either protected the teeth or did not attack them.

"Among my friends in the dental profession are three prominent periodontists who are busy every working minute keeping somebody's teeth clean and healthy. One man's mouth stays clean if he brushes it once a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week. The second needs to brush his twice a week. The third can hardly keep his mouth clean by frequent daily care. Do not these conditions exhibit different levels of the physiological threshold?

"Thousands of the children who come here to Forsyth are very susceptible to caries. A large percentage of them have other evidences of a lowered physiological threshold, such as spinal curvature or ear or throat trouble.

"I believe that great susceptibility to dental caries and debility of the soft tissues of the mouth may be merely the oral expression of a lowered physiological threshold, and that just in proportion as the things that crowd the threshold down are removed, the innate vitality of the life spark will raise the threshold to such a height that by ordinary operative and prophylactic measures we shall secure for many of our patients throughout life full complements of sound teeth in healthy tissues."

The only thing better than knowledge is wisdom. Wisdom comes with maturity which unfortunately has nothing to do with chronological age. The modern psychologists give the name "emotional maturation" to the age-long gift of understanding.

It is gratifying to know that dentistry has produced men of full years and rich wisdom: Men like Herbert Ely Williams, John G. Logan, Percy R. Howe.—E. J. R.

Hypnosis in Treatment

(*Continued from page* 120)

be said in the hope that their saying will make them come true. But certain temperaments will not be able to carry through this technique which appears to them ridiculous or antipathetic, with the inner certainty necessary for success.

Uses of Hypnotism

1. Hypnotism might well be more widely employed (1) as a harmless local anesthetic in suitable subjects and in suitable circumstances, and (2) for the relief of psychoneurotic symptoms.

2. Effective short-cuts in psychotherapy are urgently required. The time required for the application of psychoanalysis is a difficulty which prevents its use for more than a small minority of neurotic patients.

3. A large amount of neurotic illness not as yet effectively treated is of its nature capable of treatment. For some of these sufferers hypnotism might offer substantial relief.

4. Hypnotism should be investigated more thoroughly along neurophysiologic lines. The systematically applied interest of trained and critical minds might do much to (1) clear up present obscurities, (2) remove unfavorable impressions, and (3) increase understanding of high cortical activity in the brain.

From *British Medical Journal* (August 20) 1949.

See second cover D.D.3

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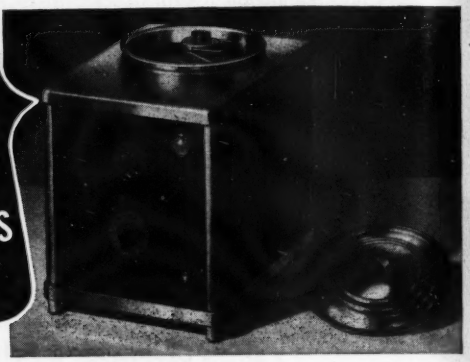

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